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المراجعة رقم (1)









Q1: CHOOSE THE CORRECT ANSWER

1 The function $f(x) = x(x - x^2)$ is a polynomial of ……… degree

ⓐ 1st ⓑ 2nd ⓒ 3rd ⓓ 4th

2 If (a , 3) lies on the straight line that represents $f(x) = 2x - 5$, then a = ………

ⓐ 2 ⓑ 1 ⓒ -2 ⓓ 4

3 If $f(x) = x^2$ and $x \in [-2 , 2]$, then $f(x) \in$ ………

ⓐ [0 , 4] ⓑ]0 , 4[ⓒ [0 , 1] ⓓ [-4 , 4]

4 If $y^2 + 4x^2 = 4xy$, then …………..

ⓐ $y \propto x$ ⓑ $y \propto x^2$ ⓒ $y \propto \frac{1}{x}$ ⓓ $y \propto \frac{1}{x^2}$

5 If 67 is the greatest value and the range is 27, then the smallest value is ………

ⓐ 67 ⓑ 40 ⓒ 27 ⓓ 94

6 If n(x)=2 , n(Y^2) = 9, then n (X x Y) = …………

ⓐ 6 ⓑ 18 ⓒ 11 ⓓ 7

7 If $f(x) = kx + 8$ and $f(2) = 0$, then k = ………

ⓐ 8 ⓑ 6 ⓒ 4 ⓓ -4

8 $f(x) = 3x$ is represented by a straight line passes through the point …………………

ⓐ (3 , 3) ⓑ (3 , 0) ⓒ (0 , 0) ⓓ (0 , 3)

9 If $f(x) = nx^2 + 3x^n - 3$, the set of all possible values of n that makes the function is of 2nd degree is …………

ⓐ {2, 3} ⓑ {0, 1, 2}

ⓒ {1, -1} ⓓ {2, 1}



10 If xy = 9, then y changes inversely with ....

ⓐ $\frac{1}{x}$ ⓑ x ⓒ 9x ⓓ $\frac{x}{9}$

11 If (x , 7) is located on Y-axis, then 5x + 1 = ...

ⓐ 0 ⓑ 1 ⓒ 5 ⓓ 6

12 If $x^2 + y^2 = 25$, xy = 12, then $(x - y)^2$ = ...

ⓐ 5 ⓑ 1 ⓒ 13 ⓓ 37

13 If $\frac{4}{x} = \frac{7}{y} = \frac{b}{y - x}$, then b = ...

ⓐ 3 ⓑ -3 ⓒ 11 ⓓ -11

14 If the point (a , 5)∈Y-axis, then a = ...

ⓐ 0 ⓑ 5 ⓒ -5 ⓓ 25

15 The vertex of the curve that represents the function $f(x) = 2x^2 - 4x + 5$ is ....

ⓐ (1 , 3) ⓑ (3, 1) ⓒ (−1, 3) ⓓ (3 , −1)

16 If $\frac{a}{b} = \frac{2}{3}$ and $\frac{a}{c} = \frac{4}{5}$, then b : c = ...

ⓐ 3 : 4 ⓑ 5 : 6 ⓒ 6 : 5 ⓓ 4 : 3

17 If n(X) = 2 and Y = {1 , 2}, then n(X × Y) = ...

ⓐ 4 ⓑ 3 ⓒ 5 ⓓ 6

18 If a, b, c and d are in continued proportion, and a + b + c = 5, b + c + d = 7, then $\frac{a}{b}$ = ...

ⓐ $\frac{5}{7}$ ⓑ $\frac{-5}{7}$

ⓒ $\frac{7}{5}$ ⓓ $\frac{-7}{5}$



19 If f (x) = 5, then f (−3) = ...

ⓐ 5 ⓑ −5 ⓒ −3 ⓓ −15

20 If X = {3 , 4}, then n(X × ∅) = ...

ⓐ 0 ⓑ 1 ⓒ 2 ⓓ ∅

21 The positive middle proportional between a and b is ......

ⓐ $\sqrt{ab}$ ⓑ $-\sqrt{ab}$ ⓒ $\pm\sqrt{ab}$ ⓓ ab

22 If $\frac{a}{b} = \frac{c}{d}$ = m where m ≠ 0, then $\frac{a \times c}{b \times d}$ = ...

ⓐ $2m^2$ ⓑ m^2 ⓒ m ⓓ 2m

23 If R = {(1 , 3) , (2 , 5) , (4 , 3)} represent a function, then its domain = ...

ⓐ {1, 2, 4} ⓑ {3, 5, 4} ⓒ Z ⓓ N

24 If {2} × {x , y} = {(2 , 4) , (2 , 3)}, then x - y = ...

ⓐ 1 ⓑ −1 ⓒ ±1 ⓓ 0

25 If $\frac{x}{5} = \frac{y}{4} = \frac{x + 2y}{k}$, then k = ...

ⓐ 9 ⓑ 14 ⓒ 13 ⓓ 8

26 The middle proportional between (x − 2) and (x + 2) is ....

ⓐ $\sqrt{x + 2}$ ⓑ $\sqrt{x^2 - 4}$ ⓒ $x^2 - 4$ ⓓ $\pm\sqrt{x^2 - 4}$

27 If the curve that represents the function f (x) = x^2 + c passes through the point (0 , 2), then c = ...

ⓐ 3 ⓑ −3

ⓒ 2 ⓓ 1



28 If y is the middle proportional between x and z, then $\frac{x}{z}$ = ...

ⓐ $\frac{x^2}{y^2}$ ⓑ $\frac{y^2}{z^2}$ ⓒ $\frac{z^2}{y^2}$ ⓓ $\frac{y^2}{x^2}$

29 The set of images of each elements of the domain of the function is called .....

ⓐ domain ⓑ codomain ⓒ range ⓓ rule

30]2 , 5] ∪ {2} = ...

ⓐ]2 , 5[ⓑ {2} ⓒ {2 , 5} ⓓ [2 , 5]

31 The third proportional of 9 and -12 is ....

ⓐ −16 ⓑ 8 ⓒ 16 ⓓ 108

32 If f (x) = $x^2 - \sqrt{2}$ x, then f ($\sqrt{2}$) = ...

ⓐ 4 ⓑ 2 ⓒ 6 ⓓ 0

33 If X = {1 , 2} and Y = {3 , 4}, then (3 , 4) ∈ ....

ⓐ X × Y ⓑ Y × X ⓒ X^2 ⓓ Y^2

34 If 5a – 4b = 0, then $\frac{a}{b}$ = ...

ⓐ $\frac{4}{5}$ ⓑ $\frac{5}{4}$ ⓒ $\frac{-4}{5}$ ⓓ $\frac{-5}{4}$

35 If X , Y are two sets where n (X × Y) = 11, then n (X) + n (Y) = ...

ⓐ 8 ⓑ 9 ⓒ 11 ⓓ 12

36 If the point (x , y) lies on the second quadrant , then the point (−x , y^2) lies on the .... quadrant.

ⓐ 1st ⓑ 2nd

ⓒ 3rd ⓓ 4th



37 If $(k^2 - 4 , k)$ lies on the negative part of y-axis , then k = ...

ⓐ ±2 ⓑ 4 ⓒ -2 ⓓ 2

38 If (a + 5 , 3) = (8 , b - 1) then $\sqrt{a^2 + b^2}$ = ...

ⓐ 7 ⓑ 5 ⓒ −5 ⓓ ±5

39 If the curve of the function f where $f(x) = x^2 - a$ passes through the point (1 , 0), then a = ...

ⓐ ±1 ⓑ -1 ⓒ 1 ⓓ 0

40 The ordered pair (x , y) where x > 0 and y < 0 is located in the .... quadrant.

ⓐ 1st ⓑ 2nd ⓒ 3rd ⓓ 4th

41 If x – 2y = 0, then x α ....

ⓐ y^2 ⓑ y ⓒ $\frac{1}{y^2}$ ⓓ $\frac{1}{y}$

42 The most common value of a set of values is called ....

ⓐ mean ⓑ median ⓒ mode ⓓ range

43 The middle proportional between 5 and 20 is ....

ⓐ 10 ⓑ -10 ⓒ 100 ⓓ ± 10

44 If $\sum(x - \overline{x})^2 = 48$ of a set of values and the number of these values is 12, then σ =......

ⓐ −4 ⓑ 4 ⓒ −2 ⓓ 2

45 If the straight line that represents the function $f(x) = 2x - a$ passes through the origin, then a = ...

ⓐ −3 ⓑ 2
ⓒ 0 ⓓ 3

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46 If all individuals are equal, then ....

ⓐ $x = 0$ ⓑ $\bar{x} = 0$ ⓒ $\sigma = 0$ ⓓ mode = 0

47 If $(a , a) \in f$ where $f(x) = 2x + 3$, then a = ...

ⓐ 3 ⓑ -3 ⓒ 0 ⓓ 1

48 If (a , b) lies in the third quadrant, then a b .... zero

ⓐ = ⓑ > ⓒ < ⓓ ≤

49 If $n(X^2) = 9$ and $n(X \times Y) = 6$, then $n(Y^2)$ = ...

ⓐ 2 ⓑ 3 ⓒ 4 ⓓ 8

50 If $3a = \frac{5}{6}b$, then $\frac{a}{b}$ = ...

ⓐ $\frac{18}{5}$ ⓑ $\frac{15}{6}$ ⓒ $\frac{6}{15}$ ⓓ $\frac{5}{18}$

51 If $(3 , 5) \in \{(3 , x) , (3 , 8) , (6 , 8)\}$, then X = ...

ⓐ 8 ⓑ 3 ⓒ 5 ⓓ 6

52 If y α x and x = 1 when y = 4, then the variation constant = ...

ⓐ 4 ⓑ 3 ⓒ 2 ⓓ 1

53 If $\frac{a}{5} = \frac{b}{7}$, then $7a - 5b + 3$ = ...

ⓐ 3 ⓑ 7 ⓒ 5 ⓓ 2

54 .... is a secondary resource of collecting data.

ⓐ Observing and measuring ⓑ Questionnaires
ⓒ Data base of the employees ⓓ Personal interview



55 If $\frac{a}{b} = \frac{c}{d} = \frac{3}{5}$, then $\frac{a+c}{b+d}$ = ...

(a) $\frac{5}{3}$ (b) $\frac{3}{5}$ (c) $\frac{6}{5}$ (d) $\frac{5}{6}$

56 The relation that represents a direct variation between x and y is ....

(a) $xy = 5$ (b) $y = x + 2$ (c) $\frac{x}{3} = \frac{4}{y}$ (d) $\frac{x}{5} = \frac{y}{2}$

57 If $b < 3$, then the point $(5 , b - 3)$ lies in the .... quadrant.

(a) First (b) Second (c) third (d) Fourth

58 The commonest measure of dispersion and the most accurate is the ....

(a) median (b) standard deviation (c) range (d) mean

59 If $x^2y^2 + \frac{1}{4} = xy$, then ....

(a) $x \propto y$ (b) $y \propto x$ (c) $y \propto \frac{1}{x}$ (d) $2x \propto 5y$

60 If $f(x + 3) = x - 3$, then $f(7)$ = ...

(a) 4 (b) 1 (c) 7 (d) 10

61 If $f(x) = 3$, then $f(-5) - f(5)$ = ...

(a) 6 (b) 1 (c) zero (d) -1

62 If $4x^2 = 9y^2$, then $\frac{x}{y}$ = ...

(a) $\frac{9}{4}$ (b) $\frac{3}{2}$ (c) $\pm\frac{3}{2}$ (d) $\pm\frac{2}{3}$

63 If the range of the values : $6 + k$, $6 - k$, $6 + 5k$ and $6 - 2k$ is 14 where $k \in N$, then k = ...

(a) 1 (b) 2
(c) 3 (d) 4

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64 If $(x - 2 , x - 4)$ lies in 4th quadrant, then x = ...

ⓐ 0 ⓑ 2 ⓒ 3 ⓓ 4

65 If $y \propto x$ and y = 2 as x = 4, then y = ... x

ⓐ $\frac{1}{2}$ ⓑ 4 ⓒ 3 ⓓ 2

66 If a, b, 2, 3 are proportional, then $\frac{b}{a}$ = ...

ⓐ $\frac{3}{2}$ ⓑ $\frac{2}{3}$ ⓒ 3 ⓓ 2

67 If a, 2, 4, b are in a continued proportional, then a + b = ...

ⓐ 1 ⓑ 8 ⓒ 7 ⓓ 9

68 If $(k^2 - 4 , k)$ lies on the negative direction of Y-axis, then k = ...

ⓐ 2 ⓑ ±2 ⓒ -2 ⓓ 0

69 If $\frac{x}{5} = \frac{y}{4} = \frac{x + 2y}{k}$, then k = ...

ⓐ 9 ⓑ 13 ⓒ 14 ⓓ 8

70 Which of the following functions is polynomial ?

ⓐ $f(x)= x^3 + x^2 + 2$ ⓑ $f(x)= x^2 + \sqrt{x} + 8$ ⓒ $f(x)= x^3 + \frac{1}{x} + 7$ ⓓ $f(x)= x(x^2 + \frac{1}{x} - 2)$

71 The difference between the greatest value and the smallest value is called ....

ⓐ median ⓑ mean ⓒ range ⓓ mode

72 The number that must be added to the numbers 1, 3, 6 to be in a continued proportional is ....

ⓐ 1 ⓑ 2
ⓒ 3 ⓓ 4



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73 If xy^5 = constant, then x varies inversely as ....

ⓐ $\frac{1}{y^5}$ ⓑ y^5 ⓒ y ⓓ y^2

74 The simplest and easiest method of measuring dispersion is ....

ⓐ median ⓑ standard deviation ⓒ range ⓓ mean

75 If 6 is the middle proportional between m and 2, then m = ...

ⓐ 8 ⓑ 12 ⓒ 18 ⓓ 36

76 The function $f(x) = x^5 - 3x^4 + 1$ is of .... degree

ⓐ fourth ⓑ ninth ⓒ fifth ⓓ second

77 If the arithmetic mean of the values : a, 5, 8, 7, 6 is 6, then a = ...

ⓐ 4 ⓑ 6 ⓒ 8 ⓓ 30

78 If $n(X^2) = 9$, then n(X) = ...

ⓐ 3 ⓑ ±3 ⓒ 9 ⓓ ±9

79 If $\frac{a}{b} = \frac{b}{c} = \frac{c}{5} = 2$, then a = ...

ⓐ 5×2^2 ⓑ 40 ⓒ 10 ⓓ 2×5^3

80 If the function $f(x) = (k - 3)x^3 + 2x^m + 1$ is of 2nd degree, then k+m= ....

ⓐ 5 ⓑ 3 ⓒ 2 ⓓ -5

81 The positive square root of the average of squares of deviations of the values from their mean is called ....

ⓐ median ⓑ mean
ⓒ range ⓓ standard deviation



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82 Selecting a sample of layers of a statistical socicty is called ....

ⓐ random ⓑ class (layer) ⓒ deliberate ⓓ bunch

83 If $x^3 = 27, \sqrt{y} = 3$, then $x + y =$ ....

ⓐ 6 ⓑ 9 ⓒ 30 ⓓ 12

84 The mean of the values 7, 3, 6, 9, 5 is ....

ⓐ 3 ⓑ 6 ⓒ 4 ⓓ 12

85 If (3 , b – 1) lies on x-axis, then b = ...

ⓐ 3 ⓑ –3 ⓒ –1 ⓓ 1

86 The function $f : f(x) = 7$ is a polynominal function of the .... degree.

ⓐ zero ⓑ third ⓒ second ⓓ first

87 If $f(x) = 4$, then $f(4) \div f(10) =$ ....

ⓐ 4 ⓑ $\frac{2}{5}$ ⓒ 1 ⓓ 10

88 If $f(x) = 3x + b$ and $f(4) = 13$, then b = ...

ⓐ 1 ⓑ 2 ⓒ 0 ⓓ 3

89 If the standard deviation of the set x + 3 , y – 1 , 5 is zero, then x + y = ...

ⓐ 12 ⓑ 4 ⓒ 8 ⓓ 0

90 If $y - x = \frac{2}{x} - \frac{2}{y}$, where $x \neq y \neq 0$, then ....

ⓐ $y \propto x + 1$ ⓑ $y \propto \frac{1}{x}$

ⓒ $y \propto \frac{x}{2}$ ⓓ $y \propto x$





Q1: CHOOSE THE CORRECT ANSWER ACCUMULATIVE

1 $2^{100} = 2^{99} +$ ....

(a) 2 (b) 1 (c) 2^{99} (d) 99

2 If $x^3 = \frac{1}{8}$, then x = ...

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) 3 (d) −3

3 If X = {a , a^3}, then a may be equal to ....

(a) −1 (b) 0 (c) 1 (d) 3

4 Double of 2^8 is ....

(a) 2^{10} (b) 2^{16} (c) 4^4 (d) 2^9

5 $x^2 - y^2 = 16$, and x + y = 8, then x − y = ...

(a) 2 (b) 1 (c) 24 (d) 32

6 If $6^x = 12$, then 6^{x+1} = ...

(a) 66 (b) 13 (c) 27 (d) 72

7 $(\sqrt{7} - 2)(\sqrt{7} + 2)$ = ...

(a) 11 (b) 3 (c) 28 (d) $\sqrt{7} + 4$

8 $x^3y^{-3} = 8$, then $\frac{y}{x}$ = ...

(a) $\frac{1}{512}$ (b) $\frac{1}{8}$ (c) $\frac{1}{2}$ (d) 2

9 The S.S of $x^2 + 16 = 0$ is ....

(a) {4} (b) {-4}
(c) {4 , -4} (d) Ø



10 If $3a = \sqrt{4}\,b$,then $\frac{a}{b}$ = ...

ⓐ $\frac{2}{3}$ ⓑ $\frac{3}{2}$ ⓒ $\frac{3}{4}$ ⓓ $\frac{4}{3}$

11 If $2^x = 8$, then x^2 = ...

ⓐ 2 ⓑ 3 ⓒ 4 ⓓ 9

12 R − Q = ...

ⓐ Z ⓑ Q̀ ⓒ Ø ⓓ R^+

13 If $\sqrt{x} = 3$, then x = ...

ⓐ 3 ⓑ 6 ⓒ 9 ⓓ $\sqrt{3}$

14 If $2^{x-4} = \frac{1}{16}$, then x = ...

ⓐ $\frac{1}{4}$ ⓑ $\frac{1}{3}$ ⓒ $\frac{1}{2}$ ⓓ 0

15 If $-1 < x < 3$, $x \in R$, then $(x + 1) \in$ ....

ⓐ {0 , 3} ⓑ [−1 , 3[ⓒ {0 , 4} ⓓ]0 , 4[

16 Half of 2^{20} = ...

ⓐ 2^5 ⓑ 5^4 ⓒ 2^{19} ⓓ 2^{10}

17 If $x - y = 5$, $x + y = \frac{1}{5}$, then $x^2 - y^2$ = ...

ⓐ $\frac{1}{25}$ ⓑ 1 ⓒ 25 ⓓ 5

18 The sum of real numbers in the interval]−3 , 3] equals ....

ⓐ 3 ⓑ zero
ⓒ −3 ⓓ can not sum



Q2: ANSWER THE FOLLOWING

1 Represent graphically the function $f : f(x) = 3 - x^2$, consider $x \in [-2 , 2]$ and from the drawing deduce :

(a) The vertex of the curve

(b) The maximum value of the function.

(c) The equation of the axis of symmetry

2 If $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, Prove that $\frac{2y - z}{3x - 2y + z} = \frac{1}{2}$

....

....

....

....

3 If $(x + 3 , 8) = (5 , 2y)$, then find the value of x and y.

....

....

4 If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{2}{3}$, and $5a - 3c + e = 18$ Find the value of $5b - 3d + f$

....

....

....

5 The following frequency distribution shows the ages of 10 children:

Age in year	5	8	9	10	12	Total
Number of children	1	2	3	3	1	10

Calculate the standard deviation of the ages in years.





6 The opposite figure represents the curve of the function f where $f(x) = m - x^2$, if OA = 4 units, Find:



ⓐ The value of m



ⓑ The coordinates of B and C

ⓒ The area of Δ ABC



....
....
....

7 If $\frac{a+b}{b} = \frac{c+d}{d}$, prove that a, b, c and d are proportional.

....
....
....

8 If $f(x) = 2x^2 - 5x + 2$, prove that $f(2) = f\left(\frac{1}{2}\right)$

....
....

9 If the straight line which represents the function $f(x) = ax + b$ intersects X-axis at (3 , 0) and Y-axis at (0 , −3), find the value of a and b

....
....
....

10 If a, b, c and d are proportional quantities, prove that: $\frac{ac}{bd} = \left(\frac{a-c}{b-d}\right)^2$

....
....
....
....



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11 If $(x^2, |y|) = (4 , 3)$ and (x , y) located in the 3rd quadrant, then find $x + y$.

....

....

12 If $f : f(x) = kx^2 + (3k + 2)x + 6$ and the x-coordinate of the vertex of the curve is -2, Find:

ⓐ The value of k

ⓑ The minimum or maximum value of function f

....

....

....

13 Find the standard deviation of the vatues : 16, 32 ,56 , 20, 27

....

....

14 In the opposite figure:

$f(x) = 4 - 2x$, Find:

ⓐ The coordinates of the two points A and B

ⓑ The area of ABO

B
A
O

....

....

....

15 If b is the middle proportional between a and c, Prove that: $\frac{a^2 + b^2}{b^2 + c^2} = \frac{a}{c}$

....

....

....

....



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16 If Y varies directly as X and Y = 20 as X = 7, Find the relation between X and Y, then find the value of X as Y = 4.

....
....
....

17 If $\frac{a}{b+c} = \frac{1}{3}$, $\frac{c}{a+b} = \frac{5}{7}$, Find the value of: $\frac{b}{a+c}$

....
....
....

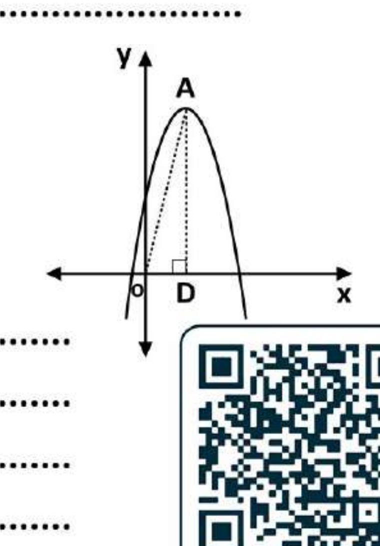
18 Two integer numbers, the ratio between them is 3 : 7 and if we subtracted 5 from each them , the ratio between them becomes 1 : 3
Find the two numbers.

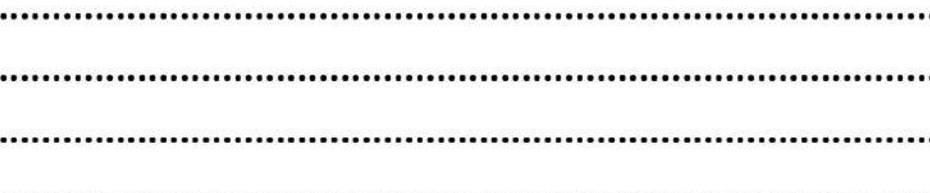
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19 If $(x - y) \propto (\frac{1}{y} - \frac{1}{x})$. Prove that: $y \propto \frac{1}{x}$

....
....
....

20 The opposite figure reprcsents the curve of the function $f : f(X) = -x^2 + 6x + k$, if the area of Δ OAB = 24 square units where A is the point of the vertex of the curve, then find the value of k





....
....
....
....



21 If $x = \{1, 3, 4, 5\}$, $y = \{1, 2, 3, 4, 5, 6\}$ and R is a relation from X to Y where "aRb" means "$a + b = 7$" for each $a \in X$, $b \in Y$

ⓐ Write R and represent it with an arrow diagram.

ⓑ Show if R is a function or not , and why ? If it is a function, find its range.

....

....

....

22 If $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{2a - 2b + 5c}{3k}$, Find the value of k

....

....

....

23 The opposite figure:
represents the curve of the function
$f(x) = x^2 - (k - 2)x - k + 4$
and ABCO is a square.
Find the value of k

....

....

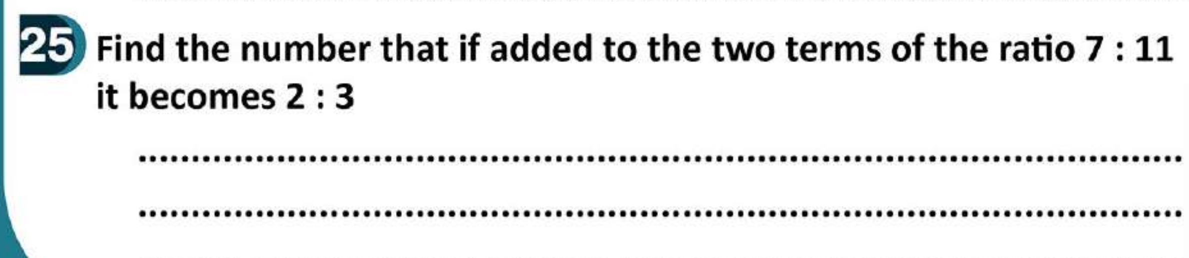
....

24 If the vertex of the curve of the function $f(x) = x^2 - ax + 3$ is $(2 , k)$.
Find the value of a and k.

....

....

25 Find the number that if added to the two terms of the ratio 7 : 11 it becomes 2 : 3







26 If $X \times Y = \{(2, 3), (2, 6), (2, 7)\}$, Find:

(a) X and Y. (b) Y^2 (c) $n(X^2)$

....

....

....

27 If $X = \{2, 3, 4\}$, $Y = \{2, 4, 6, 9, 16\}$ and R is a relation from X to Y where "aRb" means "$a^2 = b$" for all $a \in X$, $b \in Y$

(a) Write R (b) Is R a function ? Find its range.

....

....

....

28 If $X = \{1, 3, 5\}$ and R is a function on X where $R=\{(a, 3), (b, 1), (1, 5)\}$. Find the value of a + b.

....

....

29 If $\frac{x+y}{25} = \frac{x-y}{11} = \frac{x+y-z}{8}$, Prove that: $x : y : z = 18 : 7 : 17$

....

....

....

30 If 4, a, $\frac{1}{9b^2}$ are in continued proportion. Find the value of ab

....

....

31 If $y \propto x$ and y = 3 at x = 9 Find:

(a) The relation between y , x (b) The value of y at x = 12

....

....

....

....



32 If $y \propto x$, $y = 14$ when $x = 42$. find the relation between x , y then Find the value y when $x = 60$

....

....

33 If $X = \{2 , 3 , 4\}$, $Y = \{Y : Y \in N, 2 \leq y < 9\}$ and R is a relation from X to Y, where "aRb""Means" ($a = \frac{1}{2} b$) for each $a \in x$, $b \in y$.

ⓐ Write R and represent it by an arrow digram

ⓑ Show weither R is a function or not, mention its range if R function

....

....

....

34 If $x^2 + 9y^2 = 6xy$. Find $\frac{x}{y}$, then Find the value of: $\frac{x^2 - 3xy}{5xy - 1}$

....

....

....

35 If $5a - 3b = 0$, Find the value of: $\frac{7a + 9b}{4a + 6b}$

....

....

....

36 Graph the curve of function $f(x) = (x - 3)^2$ where x [0 , 6] then from the graph find:

ⓐ The vertex of the curve

ⓑ The equation of axis of symmetry

ⓒ The max. or min. value





37 If $X = \{3, 4\}$, $Y = \{4, 5\}$, $Z = \{3, 5\}$ find :

ⓐ $(X - Z) \times Y$ ⓑ $n[(Z \cap Y) \times X]$

....

....

38 If a , b , c , d are continued proportional quantities, Prove $\left(\frac{a+b}{b+c}\right)^3 = \frac{a}{d}$

....

....

....

39 If $X \subset Y$, $n(X \times Y) = 6$, $4 \in X$ and $(1, 7) \in X \times Y$, then Find:

ⓐ X , Y ⓑ $X \times Y$

....

....

40 Calculate the arithmetic mean and the standard deviation of the set of values : 8 , 9 , 10 , 11 , 12

....

....

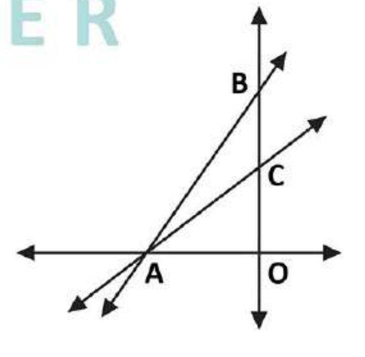
41 In the opposite figure :

AC represent the linear function f : $f(x) = 4 - \frac{4}{3}x$

AB represent the linear function r : $r(x) = kx + m$

If coordinate of B (0 , 6)

Find the value of k , m



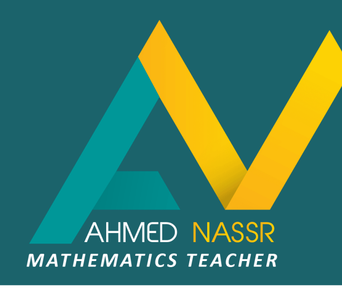
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TRIGONOMETRY

Q1: Choose the correct answer:

1 If sin 70° = cos X where X is the measure of an acute angle , then X = ...

(a) 60° (b) 45° (c) 10° (d) 20°

2 In Δ ABC, If m(∠B) = 90° , then Sin A + Cos C = ...

(a) 2 sin A (b) 2 sin C (c) 2 sin B (d) 2 cos A

3 In Δ ABC , If m(∠A) = 85° and sin B = cos B, then m(∠C)= .....

(a) 30° (b) 45° (c) 50° (d) 60°

4 For any two acute angles A and B, if sin A = cos B , then m(∠A) + m (∠B) = ...

(a) 30° (b) 180° (c) 90° (d) 60°

5 Δ ABC is a right-angled triangle at A ,then cosine angle B : sine angle C equals ....

(a) $\frac{4}{3}$ (b) $\frac{5}{3}$ (c) $\frac{3}{4}$ (d) 1

6 The angle whose measure is 50° supplements an angle of measure ....

(a) 40° (b) 90° (c) 130° (d) 180°

7 ABC is a right-angled triangle at B where 3 AC = 5 BC, then tan A = ...

(a) $\frac{4}{3}$ (b) $\frac{5}{3}$ (c) $\frac{3}{4}$ (d) $\frac{3}{5}$

8 sin 30° + cos 60° = ...

(a) $\frac{1}{4}$ (b) 0 (c) 1 (d) $\frac{\sqrt{3}}{2}$

9 If X is the measure of an acute angle, 2 sin X – 0 = 1, then X = ...

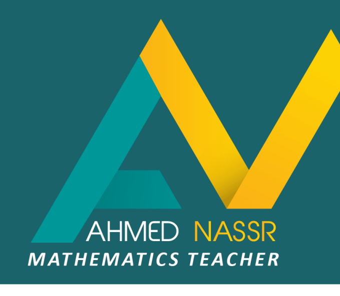
(a) 60° (b) 45° (c) 90° (d) 30°

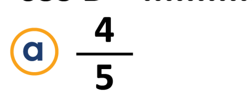
10 If cos(X + 10°) = $\frac{1}{2}$ where (X + 10°) is the measure of an acute angle, then X = ...

(a) 50° (b) 70° (c) 40° (d) 30°

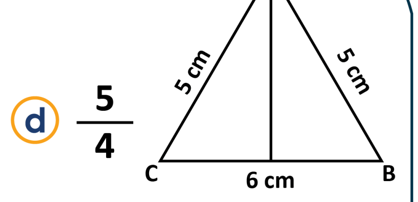
11 If X and y are complementary angles where X : y = 1 : 2, then sin X + cos y = ...

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 1 (d) $\frac{\sqrt{3}}{2}$





TRIGONOMETRY



12 In the opposite figure:
cos B = ...

ⓐ $\frac{4}{5}$ ⓑ $\frac{3}{5}$ ⓒ $\frac{5}{6}$ ⓓ $\frac{5}{4}$

13 In Δ ABC, If m(∠A) : (∠B): (∠C) = 5 : 4 : 3, Then cos B = ...

ⓐ Zero ⓑ $\frac{1}{2}$ ⓒ 1 ⓓ $\frac{\sqrt{3}}{2}$

14 If The straight line: y = X sin 30° + c passes through the point (6 , 4), then c =.........

ⓐ 4 ⓑ 6 ⓒ 8 ⓓ 2

15 The tangent of an acute angle of the right isosceles triangle is equal to ....

ⓐ $\sqrt{3}$ ⓑ $\frac{1}{\sqrt{3}}$ ⓒ 1 ⓓ $\frac{\sqrt{2}}{2}$

16 If 2 sin X = tan X where X is an acute angle, then m(X) = ...

ⓐ 60° ⓑ 45° ⓒ 15° ⓓ 30°

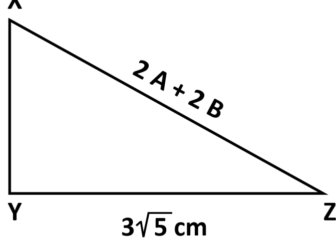
17 If tan X = $\frac{1}{\sqrt{3}}$ where X is the measure of an acute angle, then sin 2 X = ...

ⓐ $2\sqrt{3}$ ⓑ $\frac{2}{\sqrt{3}}$ ⓒ $\sqrt{3}$ ⓓ 3

18 Δ ABC is right-angled at A, if tan B = 1 , then tan C - sin C cos C = ...

ⓐ Zero ⓑ 1 ⓒ 2 ⓓ $\frac{1}{2}$

19 In the opposite figure:
Perimeter of triangle XYZ = ... cm



ⓐ $15 + \sqrt{3}$ ⓑ $15 + 5\sqrt{3}$
ⓒ $15 - \sqrt{3}$ ⓓ $3 + \sqrt{15}$

20 If cos (X + 10°) = $\frac{1}{2}$ where (X + 10°) is the measure of an acute angle, then x = ...

ⓐ 30° ⓑ 40° ⓒ 50° ⓓ 70°

21 If sin 2X = $\frac{1}{2}$ where 2 X is the measure of an acute angle, then tan 3X = ...

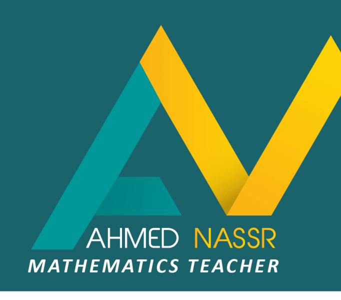
ⓐ $\sqrt{3}$ ⓑ $\frac{1}{\sqrt{3}}$ ⓒ 1 ⓓ $\frac{1}{2}$









TRIGONOMETRY

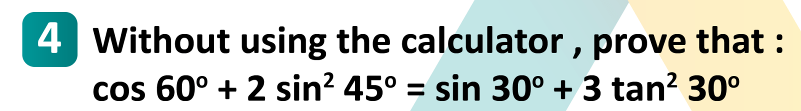
Q2: Answer the following

1 ABC is a right-angled triangle at B, where AB = 5 cm, AC = 13cm, Find the value of:
a. tan A x tan C   b. $\sin^2 C + \sin^2 A$

2 ABC is a right-angled triangle at C, AB = 5 cm, BC = 3 cm, Find:
a. The length of AC   b. sin A, sin B, tan A tan B

3 In the opposite figure:
AB ⊥ BC, AB = 13cm, AC = 15 cm, CD = 9
Find in the simplest form the value of

$$\frac{\tan(\angle CAD) - \tan(\angle BAD)}{\tan(\angle CAD) + \tan(\angle BAD)}$$



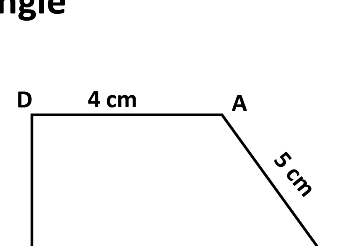
4 Without using the calculator , prove that :
$\cos 60^\circ + 2\sin^2 45^\circ = \sin 30^\circ + 3\tan^2 30^\circ$

5 ABCD is an isosceles trapezium in which :
AB = AD = DC = 5 cm, BC = 11 cm, Find:
1) m(∠B), m(∠A)   2) Area of trapezium ABCD

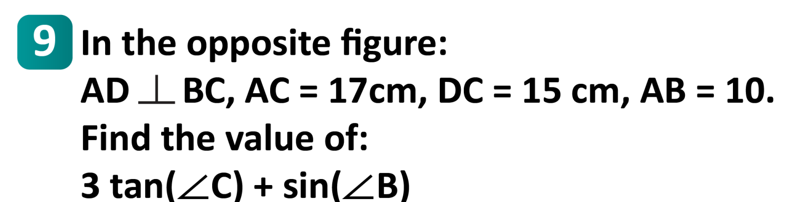
6 If $\sin^2 45^\circ = \cos E \tan 30^\circ$,
Find : m (∠E) where E is an acute angle.

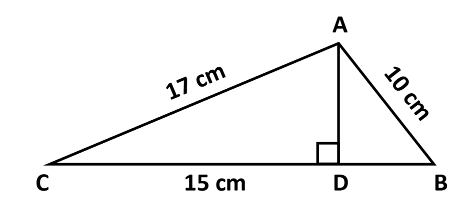
7 If $\sin X = \tan 30^\circ \sin 60^\circ$ where X is the measure of an acute angle
Find without using the calculator the value of : 4 cos X sin X

8 In the opposite figure:
ABCD is a right-angled trapezium at C,
AD // BC, AB = 5 cm, BC = 7 cm, AD = 4 cm
Find: a. sin B   b. surface area of trapezium ABCD
(note: draw AH ⊥ BC to cut it a H).



9 In the opposite figure:
AD ⊥ BC, AC = 17cm, DC = 15 cm, AB = 10.
Find the value of:
3 tan(∠C) + sin(∠B)







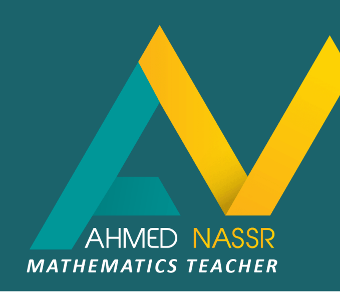












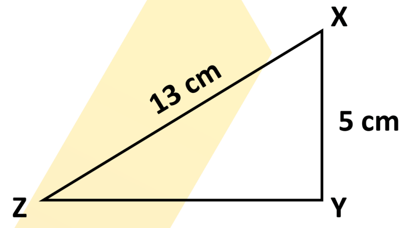
TRIGONOMETRY

10 A ladder of length 6 m, its upper end A is on a vertical wall and its lower end B is on a horizontal ground, if C is the projection of the point A on the ground and the ladder inclines by an angle of measure 60° on the ground,
Find the length of AC

11 ABCD is a rectangle whose diagonal length AC = 24 cm.
,m (∠ACB) = 25° , Find the length of BC

12 If sin X = tan 30° sin 60° where X is the measure of an acute angle
Find without using the calculator the value of : 4 cos X sin X

13 In the opposite figure:
XYZ is a right angle, m(∠Y) 90°
XY = 5 cm, XZ = 13 cm.
Find sin X cos Z + cos X sin Z



14 ABCD is an isosceles trapezoid in which : $\overline{AD}$ // $\overline{BC}$, AD = 4 cm, AB = 5 cm and BC = 12 cm

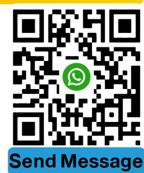
Prove that: $\frac{5 \tan B \cos C}{\sin^2 C + \cos^2 B} = 3$

اللهم اجعل هذا العمل خالصا لوجهك الكريم
واكتب له القبول والنفع يا كريم يا وهّاب.













ANALYTICAL GEOMETRY

Q1: Choose the correct answer:

1 Distance between point (2 , -3) and y-axis = ... unit length.

(a) 2 (b) -3 (c) $\sqrt{13}$ (d) $\sqrt{5}$

2 The distance between the point (5 , $\tan^2 60°$) and the x-axis is .... length unit

(a) 5 (b) 3 (c) $\sqrt{3}$ (d) $\sqrt{5}$

3 The distance between the point ($\sqrt{3}$, 1) and the origin point is .... Length unit

(a) 4 (b) 3 (c) $\sqrt{10}$ (d) 2

4 In parallelogram, the diagonals are ....

(a) perpendicular (b) equal in length

(c) bisecting each other (d) perpendicular and equal

5 If the lengths 3 , 7 , K are lengths of sides of a triangle, then K can be equal to ......

(a) 4 (b) 3 (c) 7 (d) 10

6 A circle has a surface area of 4π cm^2,then its radius length is .... cm.

(a) 4 (b) 2 (c) 4π (d) 2π

7 The slope of the straight line whose equation : X - y + 3 = 0 is ......

(a) 3 (b) -1 (c) 1 (d) -3

8 The straight line whose equation: 2y = 3x + 6 cuts from the positive direction of y-axis a part of length .... length units.

(a) $\frac{3}{2}$ (b) 2 (c) 3 (d) 6

9 The lengths of two sides of an isosceles triangle equal 3 cm, 7 cm. ,then the length of the third side equals .... cm

(a) 3 (b) 4 (c) 7 (d) 10

10 The length of the line segment which is drawn between the points (0 , 0) and (5 , 12) = ...

(a) 5 (b) 7 (c) 12 (d) 13

ANALYTICAL GEOMETRY

11 A circle of centre at the origin point and its radius length is 2 units. Which of the following points belongs to the circle ?

(a) $(1, -2)$ (b) $(-2, \sqrt{5})$ (c) $(\sqrt{3}, 1)$ (d) $(0, 1)$

12 A circle its centre is the origin and its radius length is 2 length unit ,which of the following points belongs to the circle ?

(a) $(1, 2)$ (b) $(-2, 1)$ (c) $(\sqrt{3}, 1)$ (d) $(\sqrt{2}, 1)$

13 If m_1 , m_2 are the slopes of two parallel straight lines , then ....

(a) $m_1 - m_2 = 0$ (b) $m_1 - m_2 = 0$ (c) $m_1 m_2 = 0$ (d) $m_1 - m_2 \neq 0$

14 If the two straight lines: $3X - 4y - 3 = 0$, $ky + 4X - 8 = 0$ are perpendicular ,then k= ...

(a) -3 (b) -4 (c) 4 (d) 3

15 The straight line whose equation is : $2X + 5y - 10 = 0$ cuts from the positive part of x-axis a part of length equals .... length units

(a) $\frac{2}{5}$ (b) 2 (c) $\frac{5}{3}$ (d) 5

16 The straight line whose equation is : $3X - 3y + 5 = 0$ makes a positive angle with the positive direction of x-axis , its measure = ...

(a) 30° (b) 45° (c) 60° (d) 90°

17 If the two straight lines : $X + y = 5$, $kX + 2y = 0$ are parallel: then k = ...

(a) -2 (b) -1 (c) 1 (d) 2

18 The perpendicular distance between the two staightlines: $X + 2 = 0$, $X - 4 = 0$ equals .... unit length.

(a) 5 (b) 4 (c) 6 (d) 2

19 The slope of the straight line parallel to x- axis is ....

(a) -1 (b) 0 (c) 1 (d) undefined

20 The equation of the straight line which passes through (3 , - 4) and parallel to y-axis is ....

(a) $x = 3$ (b) $y = 3$ (c) $y = -4$ (d) $x = -4$

ANALYTICAL GEOMETRY

21 The distance between the two straight lines: $y + 1 = 0$, $y + 3 = 0$ is …… unit lengths.

(a) 4 (b) 2 (c) 1 (d) 5

22 If the two straight lines: $y = ax + b$, $y = cx + d$, are perpendicular ,then ….. x …… = -1

(a) a x d (b) b x c (c) a x c (d) b x d

23 If the X-axis bisects AB such that A (3, 2) and B (- 2, y), then y = ………

(a) 3 (b) 2 (c) -2 (d) 4

24 If the straight line $y = kx + 1$ is parallel to the straight line $2y - X = 5$,then k = …………

(a) 1 (b) 2 (c) -2 (d) $\frac{1}{2}$

25 If the straight line whose equation is $k x + \sqrt{3} y = 4$ makes an angle of measure 60° with the positive direction of X-axis, then k = …………

(a) 3 (b) -3 (c) $-\sqrt{3}$ (d) $\sqrt{3}$

26 The perpendicular distance between the two straight lines $X - 2 = 0$ and $X + 3 = 0$ equals …………… length units.

(a) 1 (b) 5 (c) 3 (d) 2

27 The equation of the straight line which passes through the point (- 2 , - 3) and parallel to x-axis is ………….

(a) x = -3 (b) y = -3 (c) y = -2 (d) x = -2

28 If $AB \perp CD$, and the slope of AB = $\frac{1}{5}$, then the slope of CD = ……….

(a) -5 (b) $\frac{-1}{5}$ (c) 5 (d) $\frac{1}{5}$

29 A circle of centre at the origin point and its radius length is 2 length units ,which of the following points belongs to the circle ?

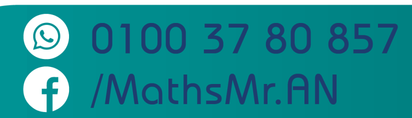
(a) (1 , -2) (b) $(-2 , \sqrt{5})$ (c) $(\sqrt{3} , 1)$ (d) (0 , 1)

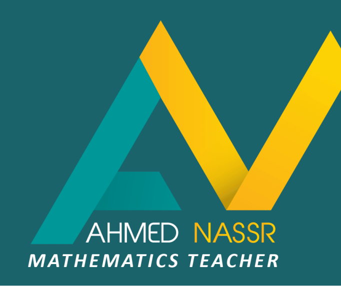
30 The distance between the two points (3 , 0) and (0 , -4) equals …….. length units

(a) 4 (b) 5 (c) 6 (d) 7

31 The equation of the straight line which passes through the point (3 , - 5) and parallel to y-axis is ………….

(a) x = 3 (b) y = -5 (c) y = 2 (d) x = -5





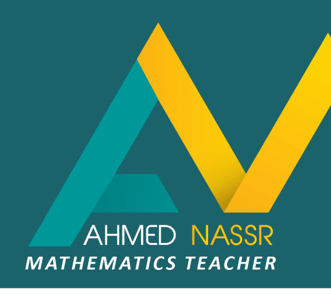
ANALYTICAL GEOMETRY

Q2: Answer the following

1. Prove that: the points A (4 , 3) , B(1 , 1) , C(-5 , -3) are collinear.
2. If the distance between the point (x ,5) and the point (6 , 1) equals $2\sqrt{5}$ length units. Find: The value of X
3. Prove that the points A (-3 , 0), B(3 , 4), C(1 , -6) are vertices of an isosceles triangle.
4. If the points x (0 , 1), Y (a, 3), Z (2, 5) are collinear, Find the value of a
5. Identify the type of the triangle whose vertices are A(-2 , 4) ,B (3 , -1) ,C(4 , 5) due to its sides lengths.
6. If C is the midpoint of AB ,A (2 , 4) , B (6 , 0) , find the coordinates of the point C
7. Show the type of Δ ABC according to its sides if A (0, 0), B (3, 4) and C (-4, 3)
8. Find the slope of the straight line which is perpendicular to the straight line passing through the two points (3 , - 2) , (5 , 1)
9. Find the equation of straight line passing through the two points (1 , 2) , (- 1 , - 2) then prove that it passes through the origin point.
10. Find the slope of the straight line: 3 y -2 x - 6 = 0 intercepted part from y-axis .
11. Find the equation of the straight line whose slope equals 2 and passes through the point (1 , 0)
12. If the straight line L_1 passes through the two points (4 , 3) , (2 , k) and the straight line L_2 makes with the positive direction of the X- axis a positive angle of measure 45°, find the value of k if $L_1 \perp L_2$
13. If C is the midpoint of AB where A(-3 , y) , B (9 , 11) and C (X , 3) ,Find: X , y
14. Prove that the straight tine which passes through the two points (-1 , 3) , (1 , 4) is parallel to the straight line whose equation is 2 y - X = 1







ANALYTICAL GEOMETRY

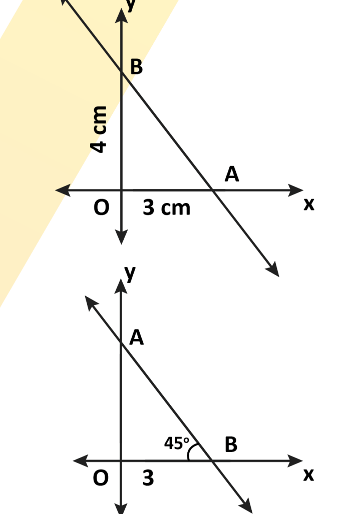
15 Find the equation of the straight line which passes through the origin point parallel to the straight line that makes an angle of measure 60° with the positive direction of the X-axis

16 Find the equation of the straight line which passes though the point (1 , 6) and the midpoint of $\overline{AB}$, where A(1 ,- 2) , B(3 , -4)

17 Find the slope of the straight line and the length of the intercepted part of y-axis where its equation is 4 X + 5 y - 10 = 0

18 Prove that the points A (3 ,- 1) ,B (-4,6) , C (2 , -2) lie on a circle whose centre is M (- 1 , 2) , then find the circumference of the circle in terms of π

19 In the opposite figure:
$\overleftrightarrow{AB}$ is a straight line Find:
1- The coordinates of the midpoint of $\overline{AB}$
2- The equation of the straight line passing by origin point perpendicular to $\overleftrightarrow{AB}$



20 In the opposite figure:
AB intercepts from the positive part of x-axis 3 length units, m(∠ ABO) = 45°
Find the equation of $\overleftrightarrow{AB}$.

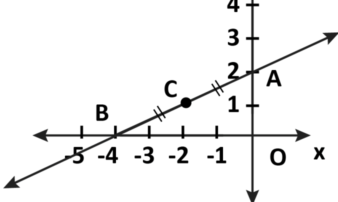
21 ABCD is a square in which: A(5 , 4) and C (-1 , 6), Find the equation of BD

22 Find the equation of the axis of symmetry of XY ,where X (3 , -2) and Y (- 5 , 6)

23 ABC is a triangle in which A(1 , 2) , B (5 ,-2) and C(3 , 4) , D is the midpoint of AB and $\overleftrightarrow{DE}$ // $\overleftrightarrow{BC}$ and intersects $\overline{AC}$ at E, Find:
1- The length of $\overline{DE}$ 2- The equation of $\overleftrightarrow{DE}$

23 Prove that the points A (3, 2), B (4 , -3), C (-1 , -2) andD (- 2 , 3) are the vertices of the rhombus ABCD

24 In the opposite figure :
C is the midpoint of $\overline{AB}$, Find:
1) The coordinates of point C 2) The equation of $\overleftrightarrow{CO}$





كيفية طباعة صفحات معينة من ملف معين



مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

خطوة 1

خطوة 2 اختيار اسم الطابعة بتاعتك

خطوة 3 كتابة الصفحات المراد طباعتها نكتب رقم 4 ثم نكتب الشرطة دي - ثم نكتب 9

خطوة 4 اختيار نوع الورق

خطوة 5 اختيار A4

خطوة 6

حمل الآن

مجانا وحصريا

المراجعة رقم (2)









Choose the correct answer:

(1) If (a+5 , 3) = (8 , b−1) then $\sqrt{a^2 + b^2}$ = ...

ⓐ 7　ⓑ 3　ⓒ 9　ⓓ 5

(2) If (X^5 , Y+1) = (32 , $\sqrt[3]{27}$), then X − Y = ...

ⓐ 0　ⓑ 4　ⓒ 2　ⓓ 5

(3) If n(X^2) = 9, then n(X) = ...

ⓐ 3　ⓑ ±3　ⓒ 9　ⓓ ±9

(4) If n(Y) = 3 and n(X×Y) = 12, then n(X^2) = ...

ⓐ 4　ⓑ 16　ⓒ 9　ⓓ 2

(5) If n(X^2) = 9 and n(X×Y) = 6, then n(Y^2) = ...

ⓐ 3　ⓑ 2　ⓒ 4　ⓓ 8

(6) If X = {2} and Y = {3}, then X×Y = ...

ⓐ 6　ⓑ {6}　ⓒ (2,3)　ⓓ {(2,3)}

(7) If X = {5}, then n(X^2) = ...

ⓐ 1　ⓑ 25　ⓒ 10　ⓓ 5

(8) If X = {1,2} and Y = {3,4}, then (3,4) ∈ ....

ⓐ X×Y　ⓑ Y×X　ⓒ X^2　ⓓ Y^2

(9) If n(X) = 2 and Y = {1,2}, then n(X×Y) = ...

ⓐ 4　ⓑ 3　ⓒ 5　ⓓ 6

(10) For any two sets A and B, then the set $\{(x,y): x \in A, y \in B\}$ refers to …………

a $n(A\times B)$ b $A\times B$ c $n(B\times A)$ d $B\times A$

(11) If $X = \{3,4\}$, then $n(X\times\varnothing) =$ ………

a 0 b 1 c 2 d $\varnothing$

(12) If $n(X) = k-2$, $n(Y) = k+2$ and $n(X\times Y) = 5$, then $k =$ ………

a 3 b -3 c ± 3 d 0

(13) If $\{2\} \times \{x,y\} = \{(2,4), (2,3)\}$, then $x-y =$ ………

a 1 b -1 c ± 1 d 0

(14) If the point $(a,5) \in$ Y-axis, then $a =$ ………

a 0 b 5 c -5 d 25

(15) If the point $(5,b-7) \in$ X-axis, then $b =$ ………

a 2 b 5 c 7 d 12

(16) If $b < 3$, then the point $(5,b-3)$ lies in the ………… quadrant.

a first b second c third d fourth

(17) If (a,b) lies in the third quadrant, then a b ………… zero

a $=$ b $<$ c $>$ d $\leq$

(18) If $(|x|,4) = (3,y^2)$ and (x,y) lies in 2nd quadrant, then $x+y=$……

a 7 b 1 c -1 d -7

(19) If $(x-2,x-4)$ lies in 4th quadrant, then $x =$ ………

a 0 b 2 c 3 d 4

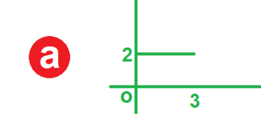
(20) If (k^2-4,k) lies on the negative direction of Y-axis, then $k=$……

a 2 b ± 2 c -2 d 0

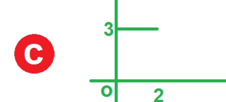
(21) If X×Y = {(1,2) , (1,3) , (1,4)}, then $n(X^2)$ = ...

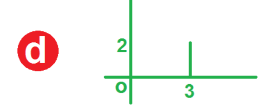
a 0 b 1 c {(1,1)} d 9

(22) {3} × [0,2] is represented by the figure ....

a 

b 

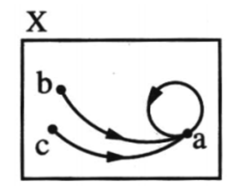
c 

d 

(23) If R = {(1,3) , (2,5) , (4,3)} represent a function, then its domain = ...

a {1,2,4} b {3,5,4} c Z d N

(24) The opposite figure represent the arrow diagram of a function on X.
The range = ...



a {a} b {a,b} c {a,b,c} d {b,c}

(25) The set of images of each element of the domain of the function is called the ....

a domain b codomain c range d rule

(26) If the function f :X→Y, then the range ⊂ ....

a X×Y b X c Y d Y×X

(27) The function $f(x) = x^5-3x^4+1$ is of .... degree.

a 4th b 9th c 5th d 2nd

(28) The function $f(x) = x(x-x^2)$ is a polynomial of .... degree.

a 1st b 2nd c 3rd d 4th

(29) The function $f(x) = x^2-(x^2-3x)$ is a polynomial of .... degree.

a 1st b 2nd c 3rd d 4th

(30) If a = 0 and b ≠ 0, then the polynomial $f(x) = ax^2+bx+c$ is of ……… degree.

ⓐ 1st ⓑ 2nd ⓒ 3rd ⓓ 4th

(31) If $f(x) = x^2-1$, then $f(1)$ = ………

ⓐ 0 ⓑ 2 ⓒ -2 ⓓ 1

(32) If $f(x) = x^2 - \sqrt{2}x$, then $f(\sqrt{2})$ = ………

ⓐ 4 ⓑ 2 ⓒ 6 ⓓ 0

(33) If $f(x) = kx + 8$ and $f(2) = 0$, then k = ………

ⓐ 8 ⓑ 6 ⓒ 4 ⓓ -4

(34) If $f(x) = nx^2 + 3x^n - 3$, the set of all possible values of n that makes the function is of 2nd degree is ……………

ⓐ {2,3} ⓑ {1,-1} ⓒ {0,1,2} ⓓ {2,1}

(35) If $(a,a) \in f$ where $f(x) = 2x + 3$, then a = ……

ⓐ 3 ⓑ -3 ⓒ 0 ⓓ 1

(36) If $X = \{1,2,3\} \rightarrow f(x) = x^2 - 1$, then $f(4)$ = ……

ⓐ 15 ⓑ 17 ⓒ 3 ⓓ undefined

(37) If the curve that represents the function $f(x) = x^2 + c$ passes through the point (0,2), then c = ……

ⓐ 3 ⓑ 2 ⓒ -3 ⓓ 1

(38) The vertex of the curve that represents the function $f(x) = 2x^2 - 4x + 5$ is ………………

ⓐ (1,3) ⓑ (3,1) ⓒ (-1,3) ⓓ (3,-1)

(39) If $f(x) = 5$, then $f(-3)$ = …………

ⓐ 5 ⓑ -5 ⓒ -3 ⓓ -15

(40) If $f(x) = 2$, then $f(3) - f(1) =$ ....

ⓐ 0 ⓑ $f(2)$ ⓒ 2 ⓓ 10

(41) If $f(x) = 4$, then $f(4) \div f(10) =$ ....

ⓐ 4 ⓑ $\frac{2}{5}$ ⓒ 1 ⓓ 10

(42) If $f(2x) = 4$, then $f(-x) =$ ....

ⓐ -2 ⓑ -4 ⓒ 4 ⓓ 2

(43) $f(x) = 3x$ is represented by a straight line passes through the point ....

ⓐ (3,3) ⓑ (3,0) ⓒ (0,0) ⓓ (0,3)

(44) If the straight line that represents the function $f(x) = 2x - a$ passes through the origin, then a = ...

ⓐ -3 ⓑ 2 ⓒ 0 ⓓ 3

(45) If $(a,4) \in f$ where $f(x) = 2x + b$, then $6a + 3b =$ ....

ⓐ 12 ⓑ 9 ⓒ 6 ⓓ 3

(46) If $f(x) = x^2$ and $x \in [-2,2]$, then $f(x) \in$ ....

ⓐ [0,4] ⓑ]0,4[ⓒ [0,1] ⓓ [-4,4]

(47) If (x,7) is located on Y-axis, then $5x + 1 =$ ....

ⓐ 0 ⓑ 1 ⓒ 5 ⓓ 6

(48) If (a,3) lies on the straight line that represents $f(x) = 2x - 5$, then a = ...

ⓐ 1 ⓑ 2 ⓒ -2 ⓓ 4

(49) If $f(x) = 3x + b$ and $f(4) = 13$, then b = ...

ⓐ 1 ⓑ 2 ⓒ 0 ⓓ 3

(50) If $f(x) = x - 6$ and $\frac{1}{3} f(a) = -2$, then a = ...

a) 1 b) 0 c) 2 d) 6

(51) The ordered pair (x,y) where $x > 0$ and $y < 0$ is located in the .... quadrant.

a) 1st b) 2nd c) 3rd d) 4th

(52) If 2x = 7y, then $\left(\frac{x}{y}\right)^{-1}$ = ...

a) $\frac{2}{7}$ b) $\frac{7}{2}$ c) $\frac{49}{4}$ d) $\frac{4}{49}$

(53) If a,b,2,3 are proportional, then $\frac{b}{a}$ = ...

a) $\frac{3}{2}$ b) $\frac{2}{3}$ c) 3 d) 2

(54) If a,1,b,2 are proportional, then $\frac{a}{b}$ = ...

a) 2 b) $\frac{1}{2}$ c) $\frac{1}{3}$ d) $\frac{1}{4}$

(55) If $4x^2 = 9y^2$, then $\frac{x}{y}$ = ...

a) $\frac{9}{4}$ b) $\frac{3}{2}$ c) $\pm\frac{2}{3}$ d) $\pm\frac{3}{2}$

(56) If $\frac{a+2b}{a-b} = \frac{2}{3}$, then $\frac{b}{a}$ = ...

a) $\frac{1}{8}$ b) 8 c) $\frac{-1}{8}$ d) -8

(57) If 5a - 4b = 0, then $\frac{a}{b}$ = ...

a) $\frac{4}{5}$ b) $\frac{5}{4}$ c) $\frac{-4}{5}$ d) $\frac{-5}{4}$

(58) If $\frac{5a-7b}{8a+11}=0$, then $\frac{b}{a}$ = ………

ⓐ $\frac{5}{7}$ ⓑ $\frac{7}{5}$ ⓒ $\frac{-8}{7}$ ⓓ 0

(59) If $\frac{4}{x}=\frac{7}{y}=\frac{b}{y-x}$, then b = ………

ⓐ 3 ⓑ -3 ⓒ 11 ⓓ -11

(60) If $\frac{a}{3}=\frac{b}{8}=\frac{a+\frac{1}{2}b}{x}$, then x = …………

ⓐ 7 ⓑ 11 ⓒ 9 ⓓ 5

(61) If $\frac{a}{b}=\frac{c}{d}=m$ where $m \neq 0$, then $\frac{a\times c}{b\times d}$ = ………

ⓐ $2m^2$ ⓑ m^2 ⓒ m ⓓ 2m

(62) If $\frac{a}{5}=\frac{b}{7}$, then 7a – 5b + 3 = …………

ⓐ 3 ⓑ 7 ⓒ 5 ⓓ 2

(63) If $\frac{x}{5}=\frac{y}{4}=\frac{x+2y}{k}$, then k = …………

ⓐ 9 ⓑ 14 ⓒ 13 ⓓ 8

(64) If $\frac{a}{4}=\frac{b}{5}$ and 2a + 3b = 46, then a = …………

ⓐ 2 ⓑ 4 ⓒ 5 ⓓ 8

(65) If $\frac{a}{b}=\frac{2}{3}$ and $\frac{a}{c}=\frac{4}{5}$, then b : c = ……………

ⓐ 3 : 4 ⓑ 5 : 6 ⓒ 6 : 5 ⓓ 4 : 3

(66) The positive middle proportional between a and b is ………

ⓐ $\sqrt{ab}$ ⓑ $-\sqrt{ab}$ ⓒ $\pm\sqrt{ab}$ ⓓ ab

(67) The third proportional of 9 and -12 is ....

a) -16 b) 8 c) 16 d) 108

(68) If 6 is the middle proportional between m and 2, then m = ...

a) 8 b) 12 c) 18 d) 36

(69) If $\frac{a}{b} = \frac{b}{c} = \frac{c}{5} = 2$, then a = ...

a) 5×2^2 b) 40 c) 10 d) 2×5^3

(70) If $\frac{a}{b} = \frac{b}{c} = \frac{c}{d} = 2$, then $\frac{a}{d}$ = ...

a) 2 b) 4 c) 8 d) 16

(71) If a,2,4,b are in a continued proportional, then a + b = ...

a) 8 b) 1 c) 9 d) 7

(72) The middle proportional between (x-2) and (x+2) is ....

a) $\sqrt{x+2}$ b) $\sqrt{x^2-4}$ c) x^2-4 d) $\pm\sqrt{x^2-4}$

(73) The number that must be added to the numbers 1,3,6 to be in a continued proportional is ....

a) 1 b) 2 c) 3 d) 4

(74) If $7, x, \frac{1}{y}$ are in a continued proportional, then x^2y = ...

a) 7 b) 14 c) 49 d) 1

(75) If y is the middle proportional between x and z, then $\frac{x}{z}$ = ...

a) $\frac{x^2}{y^2}$ b) $\frac{y^2}{z^2}$ c) $\frac{z^2}{y^2}$ d) $\frac{y^2}{x^2}$

(76) If $y = \frac{m}{x^2}$ where m is a constant $\neq 0$, then $y \propto$ ....

a) x^2 b) x c) $\frac{1}{x}$ d) $\frac{1}{x^2}$

(77) If $x - 2y = 0$, then $x \propto$ ....

a) y b) y^2 c) $\frac{1}{y}$ d) $\frac{1}{y^2}$

(78) The relation that represents a direct variation between x and y is ....

a) $x\,y = 5$ b) $y = x + 2$ c) $\frac{x}{3} = \frac{4}{y}$ d) $\frac{x}{5} = \frac{y}{2}$

(79) If y varies inversely as x and $x = \sqrt{3}$ when $y = \frac{2}{\sqrt{3}}$, then the proportion constant = ...

a) $\frac{3}{2}$ b) $\frac{2}{3}$ c) 2 d) 6

(80) If $x\,y^5$ = constant, then x varies inversely as ....

a) $\frac{1}{5}$ b) y^5 c) y d) y^2

(81) If $y \propto \frac{1}{\sqrt{x}}$, then x varies ....

a) directly as y^2 b) inversely as y^2

c) inversely as $\sqrt{y}$ d) inversely as y

(82) If $y = 3x - 6$, then $y \propto$ ....

a) x b) $\frac{1}{x}$ c) $x-2$ d) $3x-6$

(83) If $\frac{y+3}{y} = \frac{x+2}{x}$, $x \neq 0$, $y \neq 0$, then $y \propto$ ....

a) x b) $\frac{1}{x}$ c) $x+2$ d) $x+5$

(84) If $y - x = \frac{2}{y} - \frac{2}{x}$, $x \neq y$, then ....

a) $y \propto x + 1$ b) $y \propto x$ c) $y \propto \frac{1}{x}$ d) $y \propto \frac{1}{x^2}$

(85) If $9, 2x, \frac{1}{y^2}$ are proportional, then x y = ...

ⓐ $\frac{3}{2}$ ⓑ $\frac{-3}{2}$ ⓒ $\pm\frac{3}{2}$ ⓓ $\pm\frac{2}{3}$

(86) If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = m$, then $\frac{ace}{bdf} =$ ....

ⓐ 3m ⓑ m^2 ⓒ m^3 ⓓ m

(87) If y α x and y = 2 as x = 4, then y = ... x

ⓐ 4 ⓑ 3 ⓒ 2 ⓓ $\frac{1}{2}$

(88) The mean of the values 7,3,6,9,5 is ....

ⓐ 3 ⓑ 6 ⓒ 4 ⓓ 12

(89) The range of the values 23,22,15,18,17 is ....

ⓐ 8 ⓑ 18 ⓒ 19 ⓓ 23

(90) If 67 is the greatest value and the range is 27, then the smallest value is ....

ⓐ 67 ⓑ 40 ⓒ 27 ⓓ 94

(91) The most common value of set of individuals is called ....

ⓐ median ⓑ range ⓒ mode ⓓ mean

(92) If the mean of the values 3k-3 , 3k-1 , 2k+1 , 2k+3 , 2k+5 is 13, then k = ...

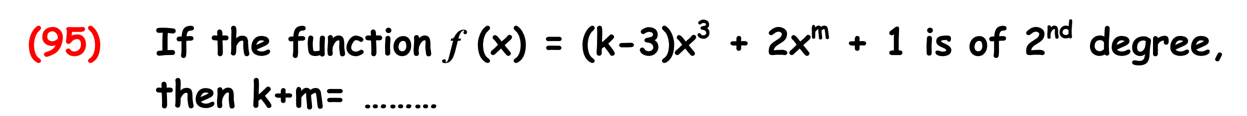
ⓐ -5 ⓑ 10 ⓒ 5 ⓓ $\frac{1}{5}$

(93) If the range of values 2,7,a,6 is 8 where $a > 0$, then a = ...

ⓐ 4 ⓑ 9 ⓒ -1 ⓓ 10

(94) If $(x - \bar{x})^2 = 28$ for the set 7 values, then σ = ...

ⓐ 28 ⓑ 7 ⓒ 4 ⓓ 2



(95) If the function f (x) = $(k-3)x^3 + 2x^m + 1$ is of 2nd degree, then k+m= ....

a 5 b 3 c 2 d -5

(96) The difference between the greatest value and the smallest value is called ....

a median b mean c range d mode

(97) If the standard deviation for the values 5 , x+2 and 2y+1 is zero, then x + y = ...

a 10 b 5 c 15 d 0

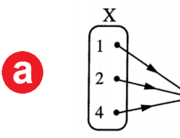
(98) The standard deviation for the values 7, 7, 7 is ....

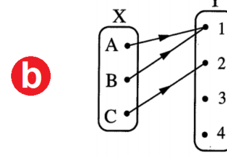
a 49 b 7 c 3 d 0

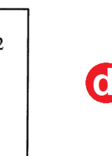
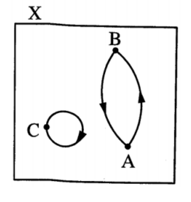
(99) If all individuals are equal, then ....

a X=0 b $\overline{X} = 0$ c σ=0 d mode=0

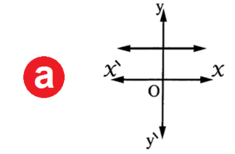
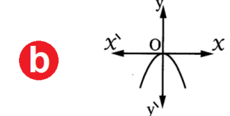
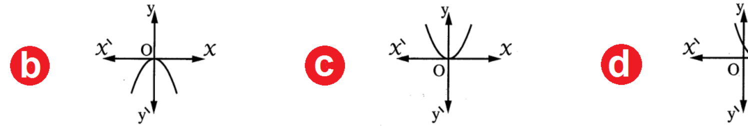
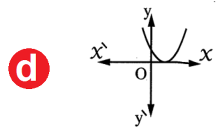
(100) Which of the following arrow diagrams does not represent a function

a 

b 

c 

d 

(101) The graph of the function f where f (x) $=x^2-2x+1$ is the graph number ....

a 
b 
c 
d 

(102) If the curve of the function f where f (x) $=x^2-a$ passes through the point (1,0), then a = ...

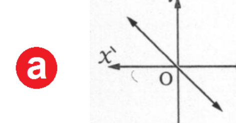
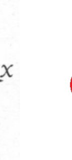
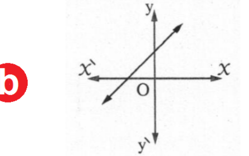
a ±1 b -1 c 1 d zero

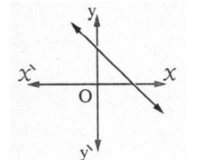
(103) If $f(x) = x^{k+3} + 2k$ is a quadratic function, then $f(2) =$ ....

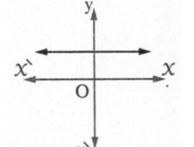


ⓐ 1 ⓑ -1 ⓒ 2 ⓓ -2

(104) The graph which represents the direct variation is number ......





Essay problems:

(1) If X = {1,5,6} and Y = {5} and Z = {2,3}, Find:
(a) n(X × Z).
(b) (Y ∩ X) × (X - Y).

(2) If X × Y = {(2,3) , (2,6) , (2,7)}, Find:
(a) X and Y.
(b) Y^2.
(c) $n(X^2)$.

(3) If X = {2,3}, Y = {3,4} and Z = {4,5}, Find:
(a) Z × (X ∩ Y)
(b) (Z – Y) × X

(4) If (x+3 , 8) = (5 , 2^y), then find the value of x and y.

(5) If (x-2 , 9) = (5 , x+y), find the value of $\sqrt{3x+2y}$.

(6) If (x^2, |y|) = (4,3) and (x,y) located in the 3rd quadrant, then find x+y.

(7) If X={1,3,5} and Y={1,2,4,5,6} and R is a relation from X to Y where aRb means a+b=7 for a∈X and b∈Y. Write R, represent it by the arrow diagram, show that R is a function and write its range.

(8) If X={1,3,5} and R is a function on X where R={(a,3), (b,1), (1,5)}. Find the value of a+b.

(9) If $f(x)=2x^2-5x+2$, prove that $f(2)=f(\frac{1}{2})$

(10) If f is a function on X where X={3,4,5,6} and $f(3)=3$, $f(4)=5$, $f(5)=5$, $f(6)=5$. represent f by an arrow diagram, write f and find its range.

(11) If the straight line which represents the function $f(x)=ax+b$ intersects X-axis at (3,0) and Y-axis at (0,-3), find the value of a and b.

(12) If $(2a,5a) \in f$ where $f(x)=2x+5$, find the value of a and identify the intersection points of the straight line with the coordinates axes.

(13) If $f(x)=(3-a)x^2+(b+5)x+4$ is a constant function. Find the value of a+b.

(14) If the vertex of the curve of the function $f(x)=x^2-ax+3$ is (2,k). Find the value of a and k.

(15) Represent graphically the function $f(x)=4-x^2$, where $x\in[-3,3]$ and from the graph identify:
(a) The vertex.
(b) The equation of the axis of symmetry.
(c) The maximum or minimum value.

(16) Represent graphically the function $f(x)=x^2+2x+1$, where $x\in[-4,2]$ and from the graph identify:
(a) The vertex.
(b) The equation of the axis of symmetry.
(c) The maximum or minimum value.

(17) If $\frac{x-2y}{x+3y}=\frac{1}{3}$, find the value $\frac{y}{x}$.

(18) If $\frac{x}{y} = \frac{2}{3}$, find the value of $\frac{3x + 2y}{6y - x}$.

(19) Find the number that if added to the two terms of the ratio 7:11 it becomes 2:3

(20) Find the number must be added to each of the numbers 3,5,8 and 12 to be proportional.

(21) Find the number if subtract its triple from the two terms of the ratio 49:69 it becomes 2:3.

(22) Find the number if we added its square to the two terms of the ratio 7:11 it becomes 4:5

(23) If $\frac{a + b}{b} = \frac{c + d}{d}$, prove that a, b, c and d are proportional.

(24) If $\frac{a}{b - a} = \frac{c}{d - c}$, prove that a, b, c and d are proportional.

(25) If a, b, c and d are proportional, prove that:

(a) $\frac{3a + c}{5a - 2c} = \frac{3b + d}{5b - 2d}$

(b) $\frac{a^2 + b^2}{ab + cd} = \frac{a}{b}$

(c) $\frac{ac}{bd} = \left(\frac{a - c}{b - d}\right)^2$.

(26) If $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, prove that $\frac{2y - z}{3x - 2y + z} = \frac{1}{2}$.

(27) If $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{2a - b + 5c}{3x}$, find the value of x.

(28) If $\frac{x}{a - b + c} = \frac{y}{b - c + a} = \frac{z}{c - a + b}$, prove that $\frac{x + y}{a} = \frac{y + z}{b}$.

(29) If $\frac{x}{2a+b} = \frac{y}{2b-c} = \frac{z}{2c-a}$, prove that

$$\frac{2x+y}{4a+4b-c} = \frac{2x+2y+z}{3a+6b}.$$

(30) If $\frac{a+b}{4} = \frac{b+c}{5} = \frac{c+a}{7}$, prove that $\frac{a+b+c}{8} = \frac{a}{3}$.

(31) If a, 3, 9, b are in a continued proportion, find the value of a and b.

(32) If $\frac{a^2+b^2}{b^2} = \frac{b^2+c^2}{c^2}$, prove that b is a middle proportion between a and c where ac is a positive quantity.

(33) If b is a middle proportion between a and c, prove that:

(a) $\frac{a}{c} = \frac{b^2}{c^2}$.

(b) $\frac{a^2+b^2}{b^2+c^2} = \frac{a}{c}$.

(34) If Y varies directly as X and Y=20 as X=7, Find the relation between X and Y, then find the value of X as Y=4.

(35) If Y α X and Y=14 as X=42, Find:
(a) The relation between Y and X.
(b) The value of Y as X=60.

(36) If $y \, \alpha \, \frac{1}{x}$ and Y=3 as X=2, Find:
(a) The relation between Y and X.
(b) The value of Y as X=1.5

(37) If $\frac{a+2b}{6} = \frac{b+3c}{3}$, prove that a α c.

(38) If $x^2y^2 - 6xy + 9 = 0$, prove that $y \, \alpha \, \frac{1}{x}$.

(39) If $4x^2 + 9y^2 = 12xy$, prove that $y \propto x$.

(40) From the opposite table:

X	2	4	6
y	6	3	2

(a) Determine the type of variation.
(b) Find the constant of variation.
(c) Find the value of y as x=3

(41) If y=z+5, $z \propto \frac{1}{x}$ and y=6 as x=2. Find the relation between x and y, then find the value of y as x=1

(42) Calculate the mean and the standard deviation of the following values:

(a) 15, 6, 8, 12, 4.

(b) 5, 6, 7, 8, 9.

(43) Calculate the standard deviation of the following frequency distributions:

(a)

Values	0	1	2	3	4	5
Frequency	9	15	17	25	20	14

(b)

Sets	0-	2-	4-	6-	8-
Frequency	1	5	9	3	2

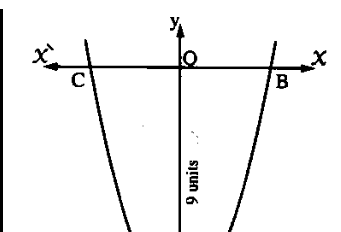
Drawn problems:

(1) The opposite figure represents the curve of the function f where $f(x) = x^2+k$. Find:

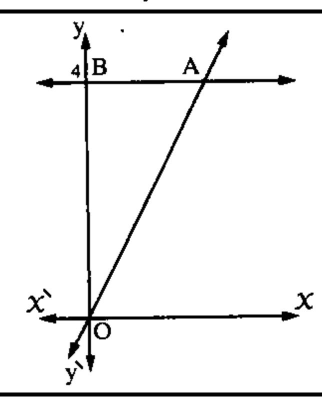
(a) The value of k.

(b) The coordinates of B and C.

(c) the area of triangle with vertices A,B,C

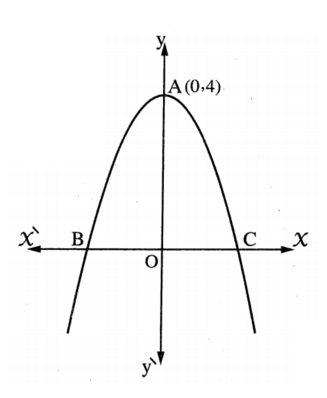


(2) The $\overleftrightarrow{AO}$ represents a linear function f where $f(x) = nx+k$ and the area of the Δ ABO is 4 square units. Find the value of n and k.



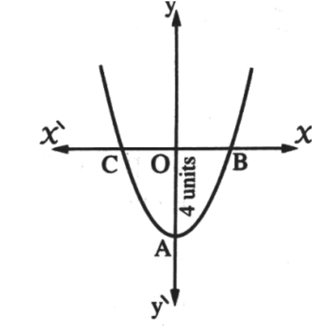
(3) The opposite figure represents the curve of the quadratic function f where $f(x) = 4-kx^2$, if the area of Δ ABC is 8 square units, Find:

(a) The value of k.
(b) The coordinates of B.
(c) The maximum or minimum value.
(d) The equation of the axis of symmetry.



(4) The opposite figure represents the curve of the function f where $f(x) = x^2-m$, Find:

(a) The value of m.
(b) The area of Δ ABC.





Choose the correct answer:

(1) The straight line whose slope $m_1=2$ intersects a straight line in one point, then the slope $m_2 \neq$ ....

a) 2   b) -2   c) $\frac{1}{2}$ d) $\frac{-1}{2}$

(2) The are of triangle that bounded by the straight lines: $x = 0$, $y = 0$ and $3x-4y=12$ is .... square unit

a) 4   b) 6   c) 12   d) 10

(3) ABCD is a square in which A(1,0) and B(5,-3), then the perimeter of the square is .... length unit

a) 5   b) 10   c) 20   d) 15

(4) If C(2,-1) is the midpoint of $\overline{AB}$, A(2,3), then the coordinates of B is ....

a) (1,2)   b) (2,1)   c) (2,-5)   d) (-5,2)

(5) The distance between (0,0) and (3,-4) is .... length unit.

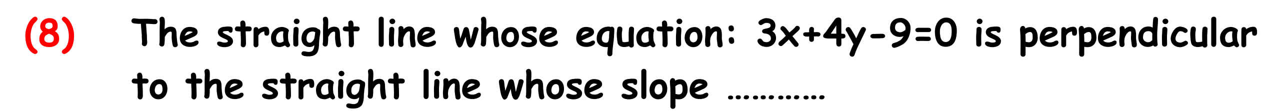
a) 1   b) 5   c) -1   d) 7

(6) The equation of the straight line passes through (3,5) and parallel to X-axis is ....

a) Y=3   b) X=3   c) Y=5   d) X=5

(7) $\overline{AB}$ is a diameter in the circle M, A(-2,3) and B(6,-5), then the coordinates of M is ....

a) (4,4)   b) (-2,1)   c) (2,-1)   d) (-1,2)



(8) The straight line whose equation: 3x+4y-9=0 is perpendicular to the straight line whose slope …………

ⓐ $\frac{3}{4}$ ⓑ $\frac{4}{3}$ ⓒ $\frac{-4}{3}$ ⓓ $\frac{-3}{4}$

(9) The distance between the point (3,-4) and the X-axis equals ………… length unit.

ⓐ -3 ⓑ 4 ⓒ -4 ⓓ 3

(10) The straight line whose slope equals to the additive identity is parallel to the straight line whose equation is …………………

ⓐ Y=X ⓑ Y=1 ⓒ X=1 ⓓ Y=-X

(11) If the X-axis bisect $\overline{AB}$ where A(4,2) and B(-2,y), then y=……

ⓐ 3 ⓑ 2 ⓒ -2 ⓓ 4

(12) Two perpendicular straight lines, the slope of the first is $\frac{-1}{4}$ and the slope of the second is 4k, then k = ………

ⓐ 4 ⓑ 1 ⓒ -4 ⓓ $\frac{1}{4}$

(13) If the two straight lines: x+y=5 and kx+2y=0 are parallel, then k = ………

ⓐ -2 ⓑ -1 ⓒ 1 ⓓ 2

(14) If the straight line whose equation bx+a=cy and passing through the origin, then …… = 0

ⓐ b×c ⓑ c ⓒ b ⓓ a

(15) The straight line whose equation y=x passing through ……

ⓐ (-1,0) ⓑ (0,0) ⓒ (1,0) ⓓ (0,-1)

(16) The slope of the straight line whose equation cx+ay=b is ……

ⓐ $\frac{-a}{b}$ ⓑ $\frac{-a}{c}$ ⓒ $\frac{-b}{c}$ ⓓ $\frac{-c}{a}$

(17) If $\frac{5}{4}$ and $\frac{k}{2}$ are two slopes of two perpendicular straight lines, then k = ...

a) $\frac{-5}{8}$ b) $\frac{5}{8}$ c) $\frac{8}{5}$ d) $\frac{-8}{5}$

(18) A circle, its center is the origin point, and its radius length is 3 length units, then the point .... belongs to the circle.

a) (1,3) b) $(-2, \sqrt{5})$ c) (3,1) d) (2,1)

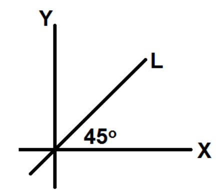
(19) The perpendicular distance between y=3 and y=-2 is ....

a) 1 b) 2 c) 3 d) 5

(20) If $\overleftrightarrow{AB} // \overleftrightarrow{CD}$ and the slope of $\overleftrightarrow{AB}$ =-2, then the slope of $\overleftrightarrow{CD}$ is ......

a) -2 b) $\frac{-1}{2}$ c) $\frac{1}{2}$ d) undefined

(21) The equation of the straight line L is ......



a) X=1 b) Y=1 c) Y=X d) Y=-X

(22) ABCD is a parallelogram, then slope of $\overleftrightarrow{AB}$ = the slope of ......

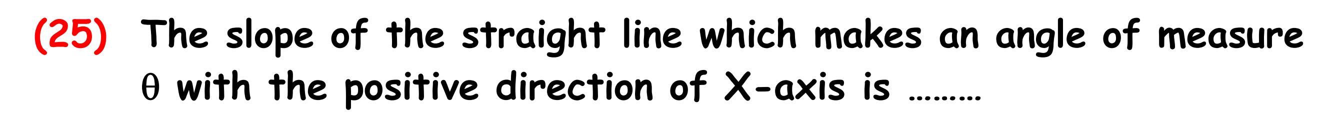
a) $\overleftrightarrow{AD}$ b) $\overleftrightarrow{AC}$ c) $\overleftrightarrow{BC}$ d) $\overleftrightarrow{CD}$

(23) The length of the intercepted part of Y-axis by the straight line 3y=4x-12 equals .... length unit.

a) 3 b) -4 c) 4 d) 12

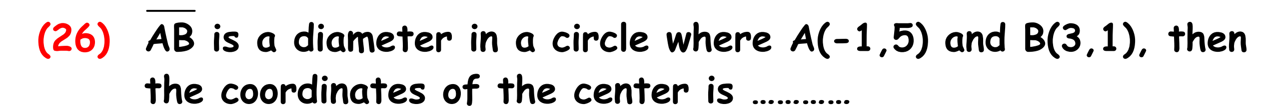
(24) The circumference of a circle whose center (0,0) and passing through the point (3,4) is .... length unit.

a) 5π b) 10π c) 4π d) 6π



(25) The slope of the straight line which makes an angle of measure θ with the positive direction of X-axis is ....

ⓐ $\sin\theta$ ⓑ $\cos\theta$ ⓒ $\tan\theta$ ⓓ $\sin\theta + \theta$

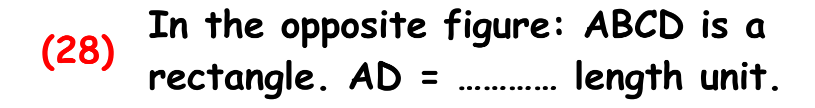


(26) $\overline{AB}$ is a diameter in a circle where A(-1,5) and B(3,1), then the coordinates of the center is ....

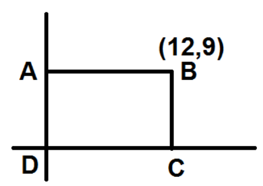
ⓐ (2,6) ⓑ (1,3) ⓒ (4,-4) ⓓ (-4,4)

(27) The slope of the straight line that parallel to the Y-axis (perpendicular to X-axis) is ....

ⓐ 0 ⓑ 1 ⓒ -1 ⓓ undefined



(28) In the opposite figure: ABCD is a rectangle. AD = ... length unit.



ⓐ 9 ⓑ 12 ⓒ 13 ⓓ 0

(29) If (0,a) belongs to the straight line 3x-4y+12=0, then a = ...

ⓐ -3 ⓑ 4 ⓒ 3 ⓓ -4

(30) The equation of the straight whose slope is 1 and passing through the origin is ....

ⓐ X=1 ⓑ Y=1 ⓒ Y=X ⓓ Y=-X

(31) The slope of the straight line which makes an angle of measure 45° with the positive direction of X-axis is ....

ⓐ 1 ⓑ -1 ⓒ 0 ⓓ 2

(32) If $\overleftrightarrow{AB}$ is parallel to x-axis where A(8,3) and B(2,k), then k=...

ⓐ 8 ⓑ 0 ⓒ 3 ⓓ 2

(33) If $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$, A(-1,2) and B(0,0), then the slope of $\overleftrightarrow{CD}$ is ......

ⓐ -2 ⓑ $\frac{1}{2}$ ⓒ $\frac{-1}{2}$ ⓓ 2

(34) If the distance between (a,0) and (0,1) is 1 length unit, then a = ...

a -1 b 0 c 1 d ± 1

(35) If the slope of the straight line ax-y+5=0 is 3, then a = ...

a 5 b -5 c 1 d 3

(36) The straight line passing through (-1,-1) and (4,4) makes an angle with positive direction of X-axis of measure ....°

a 30 b 45 c 60 d 135

(37) The slope of the straight line $2y = \frac{1}{2}(3 - 5x)$ is ....

a $\frac{-5}{2}$ b $\frac{-5}{4}$ c $\frac{3}{4}$ d $\frac{3}{2}$

(38) The straight line 3x+4y=9 is perpendicular to the straight line whose slope is ....

a $\frac{4}{3}$ b $\frac{3}{4}$ c $\frac{-4}{3}$ d $\frac{-3}{4}$

(39) ABCD is a square and A(2,-5) , B(-1,-1), then its perimeter is .... length unit.

a 5 b 20 c 7 d 28

(40) If the slopes of two straight lines are equal, then the two straight lines are ....

a perpendicular b parallel

c intersecting d skew

(41) The length of the Y intercept by the straight line 2x-3y=6 equals .... length unit.

a -6 b -2 c 6 d 2

(42) The equation of Y-axis is ………………

a) X=0 b) Y=0 c) Y=X d) XY=1

(43) The points (-3,0) , (0,3) and (3,0) are vertices of triangle whose type ………….

a) scalene
b) isosceles
c) obtuse-angled
d) isosceles and right-angled

(44) If the slope of a straight line is greater than 0, then the angle with the positive direction of X-axis is …………

a) obtuse b) acute c) right d) straight

(45) If the slope of the straight line y+ax+b=0 is -3 and passing through (1,4), then a+b=…………

a) 4 b) 7 c) -4 d) -7

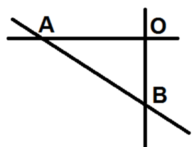
(46) If the slope of the straight line passing through the two points (k,2k+1) and (k-2,4k-1) is 3, then k = …………

a) 2 b) -2 c) 3 d) -3

(47) If the straight line y=(a-1)x +5 is parallel to the straight line that passing the two points (1,2) and (3,8), then a = …………

a) 3 b) 4 c) -4 d) 7

(48) In the opposite figure: 3 OA = 4 OB, then the equation of $\overleftrightarrow{AB}$ is …………………



a) $y = \frac{-3}{4}x + 3$
b) $y = \frac{-3}{4}x - 3$
c) $y = \frac{-4}{3}x + 3$
d) $y = \frac{-4}{3}x - 3$

(49) If the straight line $x-\sqrt{3}y=2$ makes an angle with the positive direction of x-axis of measure $(2k+20)^\circ$, then k = ...

a 30 b 20 c 10 d 5

(50) If sin θ = cos 2θ where θ is an acute angle, then θ = ...°

a 45 b 30 c 60 d 15

(51) $\frac{\sin\theta}{cox\theta}$ = ...

a 1 b tan θ c sin θ d cos θ

(52) ABC is an isosceles triangle and $\tan\left(\frac{A}{2}\right)=1$, then tan B = ...

a 1 b $\frac{1}{2}$ c 2 d 45°

(53) tan θ × cos θ = ...

a cos θ b sin θ c 1 d 0

(54) ABC is a right-angled triangle at B and $AB=\frac{1}{2}AC$, then cos A = ...

a $\frac{1}{2}$ b $\frac{\sqrt{3}}{2}$ c $\frac{1}{\sqrt{2}}$ d $\frac{1}{\sqrt{3}}$

(55) ABC is a triangle where $m(\angle B)=m(\angle A)+m(\angle C)$, then $\tan\frac{B}{2}$ =......

a 45 b 1 c $\frac{1}{2}$ d $\frac{\sqrt{3}}{2}$

(56) 4 cos 30 tan 60 = ...

a 3 b $2\sqrt{3}$ c 6 d 12

(57) If cos 2θ = $\frac{1}{2}$ where θ is an acute angle, then θ = ...°

a 15 b 30 c 45 d 60

(58) If $\tan\frac{3x}{2} = 1$ where x is an acute angle, then $m(\angle x) = ...°$

ⓐ 10 ⓑ 30 ⓒ 45 ⓓ 60

(59) If $\cos\frac{x}{2} = \frac{\sqrt{3}}{2}$ where x is an acute angle, then sin x = ...

ⓐ $\frac{1}{2}$ ⓑ $\frac{\sqrt{3}}{2}$ ⓒ $\frac{2}{\sqrt{3}}$ ⓓ $\frac{1}{\sqrt{3}}$

Essay problems:

(1) If 2 sin x = sin 30° cos 60° + cos 30° sin 60°, find the value of x.

(2) ABC is a right angled triangle at B and 2AB= $\sqrt{3}$ AC, find the trigonometric ratios of (∠A).

(3) If the ratio between two supplementary angles is 3:5, find the measure of each of them.

(4) If sin (2x+20) = cos (x+50), find the value of x.

(5) ABC is a right-angled triangle at C, AB=13 cm, BC=12cm. Prove that: sin A cos B + cos A sin B = 1

(6) Find the equation of a straight line whose slope is 2 and intercepts the positive direction of Y-axis a part of length 7 units.

(7) Find the equation of a straight line whose slope $\frac{-1}{2}$ and passing through the point (3,5).

(8) Find the equation of a straight line which passes through the points (2,3) and (-3,2).

(9) Find the equation of a straight line which passes through the point (3,-5) and parallel to the straight line $x+2y-7=0$

(10) Find the equation of a straight line which passes through the point (1,2) and perpendicular to the straight line which passes through the points (3,2) and (5,-4).

(11) Find the equation of a straight line whose slope equals the slope of the straight line $\frac{y-1}{x} = \frac{1}{3}$ and intercepts the negative direction of Y-axis a part of length 3 units.

(12) Find the equation of a straight line which intercepts the two axes two positive parts of length 4 and 9 respectively.

(13) ABCD is a square in which A(5,4) and C(-1,6). Find the equation of $\overleftrightarrow{BD}$.

(14) ABCD is a rhombus in which A(1,3) and C(6,0). Find the equation of $\overleftrightarrow{BD}$.

(15) Find the equation of the straight line which passes through A(2,3) and B(-1,-3) then prove that $C \in \overleftrightarrow{AB}$ where C(2k+1,4k+1).

(16) ABC is a triangle where A(1,3) , B(5,-2), C(3,4), D is the midpoint of $\overline{AB}$, $\overrightarrow{DE}$ // $\overleftrightarrow{BC}$ intersects $\overline{AD}$ in E. Find:
(a) the length of $\overline{DE}$. (b) the equation of $\overleftrightarrow{DE}$

(17) The opposite table represents a linear relation:

x	1	2	3
$f(x)$	1	3	a

(a) Find the equation of the straight line.
(b) Find the length of y intercept.
(c) Find the value of a.

(18) If A(-3,4) , B(5,-1) and C(3,5). Find the equation of the straight line which passes through A and the mid point of $\overline{BC}$.

(19) Find the equation of the straight line which passes through the point (3,5) and intercepts a part of the positive direction of X-axis of length 4 units.

(20) Find the equation of line of symmetry of $\overline{XY}$ where X(3,-2) and Y(-5,6).

(21) If the distance between (a,5) and (6,1) is $2\sqrt{5}$, find the value of a.

(22) If A(x,3), B(3,2), C(5,1) and AB=BC, find the value of x.

(23) If C(x,-3) is the midpoint of AB where A(-3,y) and B(9,-7), find the value of x and y.

(24) Prove that A(4,3), B(1,1) and C(-5,-3) are collinear.

(25) If (1,1), (3,5) and (5,a) are collinear, find the value of a.

(26) Prove that the triangle whose vertices are A(5,-5), B(-1,7) and C(15,15) is right-angled at B, then find its area.

(27) Determine the type of Δ ABC according to the length of its sides where A(-2,4), B(3,1) and C(4,5).

(28) If A(5,3), B(6,-2), C(1,-1) and D(0,4). Prove that ABCD is a rhombus and find its area.

(29) ABCD is a parallelogram in which A(3,4), B(2,-1), C(-4,-3). Find the coordinates of D.

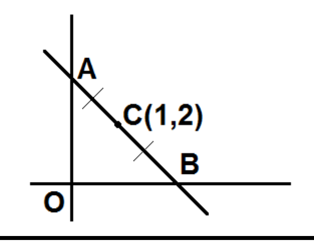
(30) If A(3,-2), B(-5,0), C(8,-9) and D(0,7) prove that ABDC is a parallelogram.

Drawn Problems:

(1) From the opposite figure, Find:

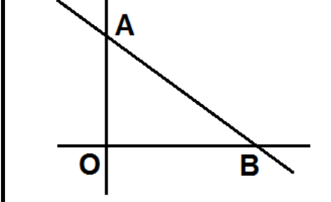
(a) the coordinates of A and B

(b) The area of $\triangle$ AOB.

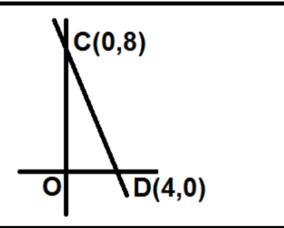


(2) In the opposite figure, if $\overleftrightarrow{AB}$ intercepts Y-axis in the positive direction a part of 3 units and AB = 5 units.

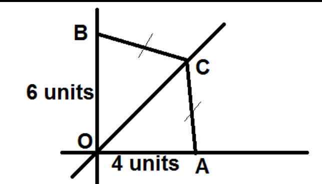
Find: the equation of $\overleftrightarrow{AB}$



(3) The equation of $\overleftrightarrow{AB}$ is CX+Y+D=0, find the value of C and D.



(4) The equation of $\overleftrightarrow{OC}$ is Y=X, find the coordinates of C.



(5) In the opposite figure, if $\tan(\angle ABO) = \frac{4}{3}$,

Find:

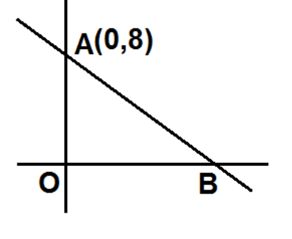
(a) $m(\angle BAO)$

(b) the coordinates of B



(c) The slope of $\overleftrightarrow{AB}$.

(d) The equation passes through O and perpendicular to $\overleftrightarrow{AB}$



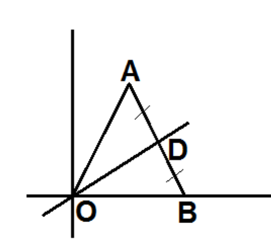
(6) In the opposite figure, ABO is an equilateral triangle, D is the midpoint of AB, Find:



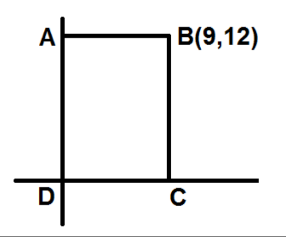
(a) The slope of $\overleftrightarrow{AB}$.

(b) The equation of $\overleftrightarrow{OD}$.

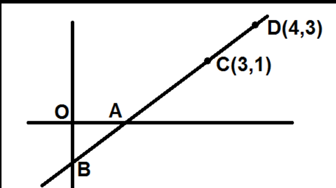
(c) If $(5\sqrt{3}, k) \in \overleftrightarrow{OD}$, find the value of k.



(7) ABCD is a rectangle, find length of $\overline{AD}$.



(8) Find the length of each $\overline{AD}$ and $\overline{OB}$

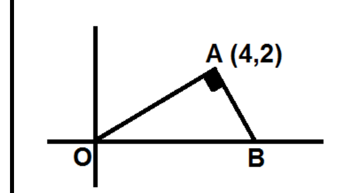


(9) Find:

(a) The coordinates of B.

(b) The equation of $\overleftrightarrow{AB}$.

(c) tan (∠ABO)



(10) From the opposite figure, Find:

(a) The length of $\overline{AB}$.

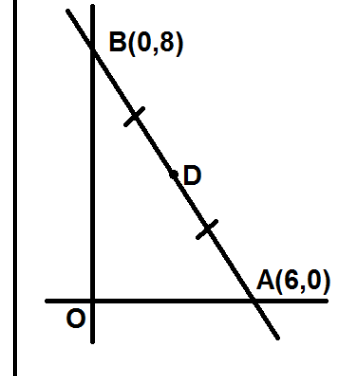
(b) The coordinates of D.

(c) $m(\angle ABO)$.

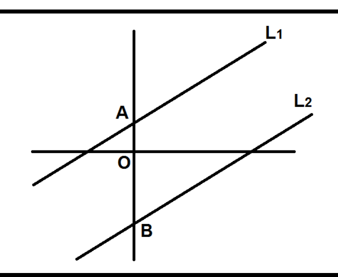
(d) The slope of the perpendicular to $\overleftrightarrow{AB}$.

(e) The equation of the straight which parallel to $\overleftrightarrow{AB}$ and passes through the origin.

(f) sin A cos B + cos A sin B



(11) If $L_1 // L_2$, the equation of L_1 is $y=\frac{2}{3}x+2$ and AB=5 units. Find the equation of L_2.

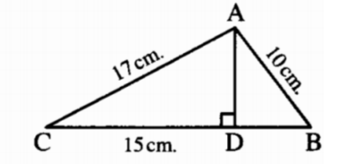


(12) **In the opposite figure :**

$\overline{AD} \perp \overline{BC}$, AC = 17 cm. , DC = 15 cm. , AB = 10 cm.

Find the value of :

3 tan (∠ C) + sin (∠ B)

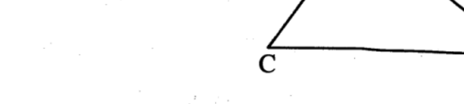


(13) **In the opposite figure :**

ABC is a triangle in which : m (∠ A) = 90°

, AC = 15 cm. and AB = 20 cm.

Prove that : cos C cos B – sin C sin B = zero



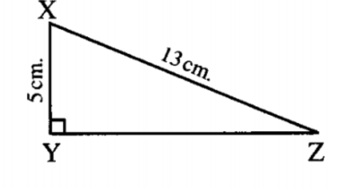


(14) **In the opposite figure :**

XYZ is a triangle , m (∠ Y) = 90°

XY = 5 cm. , XZ = 13 cm.

Find: sin X cos Z + cos X sin Z



THIRD: ACCUMULATIVE SKILLS GEOMETRY

(1) The sum of measure of accumulative angles at point = ……°

a 90 b 180 c 270 d 360

(2) The sum of measures of interior angles of the pentagon = ……°

a 180 b 360 c 540 d 720

(3) The number of diagonals of the hexagon = …………

a 6 b 3 c 12 d 9

(4) ABC is a triangle in which $m(\angle B) = 3m(\angle A) = 90^\circ$, then $m(\angle C)$=…°

a 30 b 45 c 60 d 90

(5) ABCD is a parallelogram $m(\angle A) : m(\angle B)$ = 1 : 3, then $m(\angle B)$=…°

a 45 b 135 c 120 d 115

(6) If 3,7,L are lengths of sides of triangle, then L may = ……

a 3 b 4 c 7 d 10

(7) ABC is an isosceles triangle, the lengths of two sides 3cm and 7cm, then the third side may = ……… cm

a 3 b 7 c 4 d 10

(8) ABC is a triangle in which AB=AC and $m(\angle A)$= 60°,then the number of axes of symmetry of this triangle = ………

a 1 b 3 c 0 d 2

(9) The number of axes of symmetry of a circle is ………

a 0 b 1 c 4 d infinite

(10) ABC is a triangle in which $m(\angle B) > m(\angle C)$, then ……………



ⓐ AC-AC<0 ⓑ AC-AB≤0 ⓒ BC≤AB ⓓ AC>AB

(11) The base angles of the isosceles triangle are …………

ⓐ congruent ⓑ supplementary

ⓒ equal ⓓ complementary

(12) The angle of measure ……… supplements an angle of measure 120°.

ⓐ 120 ⓑ 240 ⓒ 60 ⓓ 30

(13) The quadrilateral whose diagonals perpendicular and equal en length is called ………………

ⓐ square ⓑ rhombus ⓒ circle ⓓ rectangle

(14) The volume of a cuboid whose dimensions $\sqrt{2}$, $\sqrt{3}$, $\sqrt{6}$ is …… cm^3

ⓐ $2\sqrt{6}$ ⓑ $3\sqrt{6}$ ⓒ $2\sqrt{3}$ ⓓ 6

(15) The measure of exterior angle of an equilateral triangle is …°

ⓐ 60 ⓑ 80 ⓒ 100 ⓓ 120

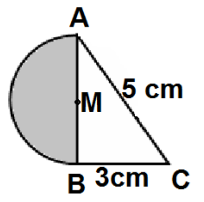
(16) IF $\overline{AB} \equiv \overline{CD}$, then AB – CD = …………

ⓐ 0 ⓑ 1 ⓒ -1 ⓓ 2

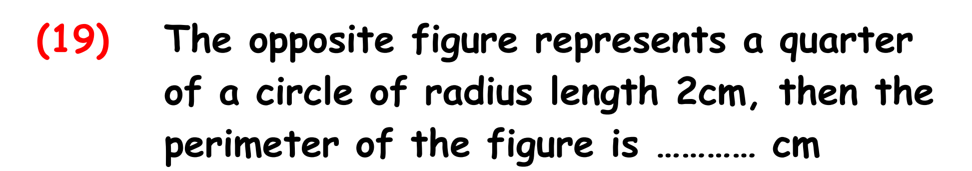
(17) The image of the point (-3,7) by reflection in Y-axis is ……

ⓐ (3,7) ⓑ (-3,-7) ⓒ (3,-7) ⓓ (-3,7)

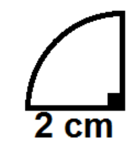
(18) From the opposite figure, the area of the shaded part is ………… cm^2



ⓐ 4π ⓑ 16π ⓒ 2π ⓓ 9π



(19) The opposite figure represents a quarter of a circle of radius length 2cm, then the perimeter of the figure is ………… cm



ⓐ 2π ⓑ 5π ⓒ $\pi+4$ ⓓ $4\pi+4$

(20) In Δ ABC, if $m(\angle C) = m(\angle A) + m(\angle B)$, then ABC is …………

ⓐ acute-angled triangle ⓒ right-angled triangle
ⓑ isosceles triangle ⓓ obtuse-angled triangle

(21) In any triangle ABC, AB + BC – AC > …………

ⓐ 0 ⓑ 1 ⓒ AC ⓓ otherwise

(22) The sum of lengths of any two sides in a triangle is …… the length of the third side.

ⓐ more than ⓑ less than ⓒ equal to ⓓ twice

(23) The type of the angle of measure 108° is ……………

ⓐ right ⓑ obtuse ⓒ acute ⓓ reflex

(24) If ABCD is a parallelogram, then AB + CD = …………

ⓐ 2AC ⓑ 2BC ⓒ 2BD ⓓ 2CD

(25) If ABCD is a parallelogram and $m(\angle A) + m(\angle C) = 150^\circ$, then $m(\angle B) =$ ………$^\circ$

ⓐ 75 ⓑ 30 ⓒ 105 ⓓ 100

(26) Two equal complementary angles, the measure of each of them is …………$^\circ$

ⓐ 50 ⓑ 60 ⓒ 45 ⓓ 30

(27) The length of side opposite to the angle of measure 30° in the right angled triangle equals …… the length of the hypotenuse.

ⓐ 2 ⓑ $\frac{1}{2}$ ⓒ $\frac{1}{3}$ ⓓ $\frac{2}{3}$

(28) In the Δ ABC, if AB > AC, then $m(\angle B)$.........$m(\angle C)$.

ⓐ > ⓑ < ⓒ = ⓓ ≡

(29) The concurrence point of medians of triangle divides each median in the ratio ...... : ...... from the vertex.

ⓐ 1:1 ⓑ 2:3 ⓒ 1:2 ⓓ 2:1

(30) The circumference of a circle whose its diameter length 14 cm is .... cm

ⓐ 7 ⓑ 22 ⓒ 44 ⓓ 14

(31) The image of (-4,5) by a translation (2,-3) is ....

ⓐ (-2,-2) ⓑ (2,-2) ⓒ (2,2) ⓓ (-2,2)

(32) ABC is a right-angled triangle at B, AB = 3cm, BC = 4cm, then the area of triangle = ... cm^2

ⓐ 9 ⓑ 6 ⓒ 12 ⓓ 7

(33) If the perimeter of a square is 16 cm, then its area =...... cm^2

ⓐ 64 ⓑ 16 ⓒ 8 ⓓ 4

(34) The sum of measure of two supplementary angles = ...°

ⓐ 360 ⓑ 270 ⓒ 180 ⓓ 90

(35) Which of the following are sides of a right-angled triangle?

ⓐ 3,4,6 ⓑ 5,12,13 ⓒ 6,8,9 ⓓ 9,5,14

(36) The isosceles trapezium has .... axes of symmetry

ⓐ 1 ⓑ 2 ⓒ 0 ⓓ 3

(37) The rhombus (rectangle) has .... axes of symmetry

ⓐ 0 ⓑ 1 ⓒ 2 ⓓ 3

(38) The square has .... axes of symmetry

ⓐ 1 ⓑ 2 ⓒ 3 ⓓ 4

FOURTH: ACCUMULATIVE SKILLS ALGEBRA



(1) $\{3\} \subset$ ....

ⓐ (3,7) ⓑ]3,7] ⓒ]3,7[ⓓ {3,7}

(2) $[2,7] - \{2,7\} =$ ....

ⓐ [1,6] ⓑ $\varnothing$ ⓒ]2,7[ⓓ {0}

(3) 2 567 approximated to the nearest five is ....

ⓐ 2 560 ⓑ 2 565 ⓒ 2 570 ⓓ 2 575

(4) $2^{2017} = 2^{2016} +$ ....

ⓐ 1 ⓑ 2 ⓒ 2016 ⓓ 2^{2016}

(5) If $[-1,x] \cap [y,5] = [2,3]$, then $x^{y} =$ ....

ⓐ 8 ⓑ $\frac{1}{5}$ ⓒ 9 ⓓ -1

(6) When the side length of a square increases by the ratio 10%, then its area increases by the ratio .... %

ⓐ 10 ⓑ 15 ⓒ 20 ⓓ 21

(7) The ratio between the area of a square shaped region of side length x cm to the area of another square shaped region of side length 2x cm is ....

ⓐ 1:2 ⓑ X:4 ⓒ 1:4 ⓓ 4:1

(8) If x is an odd number, then the next odd number is ....

ⓐ x^2 ⓑ x^2+x ⓒ $x+1$ ⓓ $x+2$

(9) If M represents a negative number, which of the following represents a positive number?

a M^3 b M^2 c 2M d M÷2

(10) Half of the number 2^{20} is ....

a 2^{10} b 1^{20} c 2^{19} d 1^{10}

(11) $3^{25} + 3^{25} + 3^{25} =$ ....

a 3^{75} b 3^{50} c 3^{26} d 3^{25}

(12) $3^x + 3^x + 3^x =$ ....

a 3^x b 3^{3x} c 3^{x+1} d 3^{x+3}

(13) $2^5 + 2^5 + 2^5 + 2^5 =$ ....

a 2^7 b 2^6 c 2^4 d 2^{20}

(14) If $x + y = 5$ and $x - y = \frac{1}{5}$, then $x^2 - y^2 =$ ....

a 125 b 1 c 25 d 5

(15) If $x + y = x\,y = 5$, then $x^2\,y + y^2\,x =$ ....

a 10 b 15 c 20 d 25

(16) If $(x - y)^2 = 20$ and $x^2 + y^2 = 10$, then $x\,y =$ ....

a 10 b 5 c -5 d 20

(17) If $1 < x < 3$, then $(3x-1) \in$ ....

a [2,8[b [2,8] c]2,8[d {2,8}

(18) The S.S. of the inequality $5-3x > 11$ in R is ....

a]-∞,-2[b]-2, ∞[c]-∞,-2] d [-2,2]

(19) The sum of the two square roots of the number $2\frac{1}{4}$ is ……

ⓐ zero ⓑ $\frac{3}{2}$ ⓒ 3 ⓓ $\frac{9}{4}$

(20) Four times the number 2^8 is ………

ⓐ 2^{32} ⓑ 8^8 ⓒ 2^{10} ⓓ 4^8

(21) If $x = \sqrt{3} + \sqrt{2}$ and $y = \frac{1}{\sqrt{3} + \sqrt{2}}$, then $(x + y)^2$ = ………

ⓐ 8 ⓑ 0 ⓒ 9 ⓓ 12

(22) If $2^x = \frac{1}{8}$, then x = …………

ⓐ $\frac{1}{2}$ ⓑ $\frac{1}{3}$ ⓒ 3 ⓓ -3

(23) If 100 grams of food contains 300 calories, then how many calories are there in 30 grams of the same food?

ⓐ 90 ⓑ 100 ⓒ 1 000 ⓓ 9 000

(24) A book contains 56 pages. How many times the number 5 appears in the pages serial of this book?

ⓐ 6 ⓑ 7 ⓒ 12 ⓓ 13

(25) If we put on one side of a road of length 12 km some light poles from the beginning to the end of the road, where the distance between each two consecutive poles is $\frac{1}{2}$ km, then the number of poles is ……………

ⓐ 12 ⓑ 24 ⓒ 25 ⓓ 23

(26) The decimal that lies between 0.07 and 0.08 is …………

ⓐ 0.00075 ⓑ 0.0075 ⓒ 0.075 ⓓ -0.75

(27) The square of double the number $\frac{1}{2}$ is ....

a $\frac{1}{4}$ b $\frac{1}{8}$ c 1 d 2

(28) $\frac{1}{x} + \frac{1}{y} + \frac{1}{xy} = \frac{\dots}{xy}$

a 2 b 3 c x+y+1 d x+y

(29) [1,6] – [1,6[= ....

a {1} b {9} c {6} d]1,6[

(30) $Z^- \cup N =$ ....

a $\varnothing$ b N c Z d R

FOURTH: ACCUMULATIVE SKILLS ALGEBRA

1.	D	2.	C	3.	B	4.	D
5.	C	6.	D	7.	C	8.	D
9.	B	10.	C	11.	C	12.	C
13.	A	14.	B	15.	D	16.	C
17.	C	18.	A	19.	A	20.	C
21.	D	22.	D	23.	A	24.	D
25.	C	26.	C	27.	C	28.	C
29.	C	30.	C				



FIRST: ALGEBRA

Choose the correct answer:

1.	D	2.	A	3.	A	4.	B
5.	C	6.	D	7.	A	8.	D
9.	A	10.	B	11.	A	12.	A
13.	C	14.	A	15.	C	16.	D
17.	C	18.	C	19.	C	20.	C
21.	B	22.	D	23.	A	24.	A
25.	C	26.	C	27.	C	28.	C
29.	A	30.	A	31.	A	32.	D
33.	D	34.	D	35.	B	36.	D
37.	B	38.	A	39.	A	40.	A
41.	C	42.	C	43.	C	44.	C
45.	A	46.	A	47.	B	48.	D
49.	A	50.	B	51.	D	52.	A
53.	A	54.	B	55.	D	56.	C
57.	A	58.	A	59.	A	60.	A
61.	B	62.	A	63.	C	64.	D
65.	C	66.	A	67.	C	68.	C
69.	B	70.	C	71.	C	72.	D
73.	C	74.	A	75.	B	76.	D
77.	A	78.	D	79.	C	80.	B
81.	B	82.	C	83.	A	84.	C
85.	C	86.	C	87.	D	88.	B
89.	A	90.	B	91.	C	92.	C
93.	D	94.	D	95.	A	96.	C
97.	B	98.	D	99.	C	100.	C
101.	D	102.	C	103.	C	104.	A



Choose the correct answer:

1.	A	2.	B	3.	C	4.	C
5.	B	6.	C	7.	C	8.	B
9.	B	10.	B	11.	C	12.	B
13.	D	14.	D	15.	B	16.	D
17.	D	18.	B	19.	D	20.	A
21.	C	22.	D	23.	C	24.	B
25.	C	26.	B	27.	D	28.	A
29.	C	30.	C	31.	A	32.	C
33.	B	34.	B	35.	D	36.	B
37.	B	38.	A	39.	B	40.	B
41.	D	42.	A	43.	D	44.	B
45.	C	46.	B	47.	B	48.	B
49.	D	50.	B	51.	B	52.	A
53.	B	54.	A	55.	B	56.	C
57.	B	58.	B	59.	B		

THIRD: ACCUMULATIVE SKILLS GEOMETRY

1.	D	2.	C	3.	D	4.	C
5.	B	6.	C	7.	B	8.	B
9.	D	10.	D	11.	A	12.	C
13.	A	14.	D	15.	D	16.	A
17.	A	18.	A	19.	C	20.	C
21.	A	22.	A	23.	B	24.	D
25.	C	26.	C	27.	B	28.	B
29.	D	30.	C	31.	D	32.	B
33.	B	34.	C	35.	B	36.	A
37.	C	38.	D				

حمل الآن

مجانا وحصريا

المراجعة رقم (3)







Complete each of the following

1. The point (5 , - 3) lies in ……….. quadrant
2. The point (4 , 0) lies on ……… - axis
3. If : (5 , x – 7) = (y + 1 , - 5) , then x + y = ……..
4. If : (x + 5 , 8) = (1 , 6 y + x) , then y = ……..
5. If : n (x) = 5 , n (x x Y) = 15 , then n (Y) = ……..
6. If : x x Y = { (1 , 5) , (1 , 7) , (2 , 5) , (2 , 7) , (3 , 5) , (3 , 7) } , then x = ...
7. If f is function where f : $x \to$ Y , then X is called …… and Y is called ……
8. If f is function from set x to set Y , then the range of function f ⊂ ......
9. If : f (x) = 5 x – 7 , then f (3) = ...
10. If : f (x) = 6 x , then f (2) + f (-2) = ……
11. If : f (x) = 3 x + b , f (4) = 13 , then b = ……..
12. If : f (x) = x – 6 and $\frac{1}{3}$ f (a) = - 2 , then a = …….
13. If : x = { 1 , 3 , 5 } f : X → ℝ and f (X) = 2 X + 1 , then the range of f = …….
14. Function f : ℝ → ℝ such that f (x) = 3 x represented by a straight line passes through the point (- 4 , ………)
15. The linear function f : f (x) = x + 7 is represented by a straight line cuts x - axis at the point ………
16. The linear function f : f (x) = 2 x – 1 is represented by a straight line cuts y - axis at the point ……….
17. The linear function f : f (x) = 2 – 3 X is represented by straight line cuts y – axis at point ……….
18. If the point (a , 3) lies on the straight line which represents the function f : ℝ → ℝ where f (x) = x – 5 , then a = …….
19. If f is a function where f (x) = 3 x – 1 is represented graphically by a straight line passes through the point (a , 2) then a = ……….
20. If : (2 , - 6) ∈ f: f (x) = k x + 8 , then k = ………

Choose the correct answer from those given

(1) The point $(-3\ ,\ 4)$ lies in … … … . quadrant

ⓐ first	ⓑ second	ⓒ third	ⓓ fourth

(2) If : $x = \{5\}$, $Y = \{3\}$, then $n(x \times Y) =$ ……..

ⓐ 15	ⓑ 8	ⓒ 2	ⓓ 1

(3) If : $x = \{5, 6, 7\}$, then $n(x^2) =$ ……..

ⓐ 3	ⓑ 6	ⓒ 9	ⓓ 12

(4) If : $n(x)^2 = 9$, then $n(x) =$ ……..

ⓐ 3	ⓑ 6	ⓒ 18	ⓓ 81

(5) If $x \times Y = \{(1\ ,\ 3),\ (1\ ,\ 4)\}$, then $n(x) =$……..

ⓐ 3	ⓑ 1	ⓒ 4	ⓓ 2

(6) If: x { 3 , 5 , 7 }and R is a relation on x , then the relation which represents a function is ……..

ⓐ R = { (3 , 5) , (5 , 3) , (3 , 7) }	ⓑ R = { (3 , 5) , (5 , 7) }
ⓒ R = { (3 , 5) , (5 , 5) , (7 , 5) }	ⓓ R = { (3 , 3) , (3 , 5) , (3 , 7) }

(7) If R is a function from set x to set Y where $x = \{2, 5, 8\}$, $y = \{3, 5\}$and $R = \{(2, 3), (5, 3), (X, 3)\}$, then $x =$……..

ⓐ 2	ⓑ 3	ⓒ 5	ⓓ 8

(8) If the function f is a function from set x to set Y then the domain of the function is ……..

ⓐ X	ⓑ Y	ⓒ X x Y	ⓓ Y x X

(9) If R is a function where R = { (4 , 3), (5 , 6), (9 , 3)}then the range of the function R is … … ..

ⓐ { 3 , 4 , 5 , 6 , 9 }	ⓑ { 4 , 5 , 9 }
ⓒ { 3 , 6 , 9 }	ⓓ { 3 , 6 }

(10) If the point $(x, 7)$ lies on y − axis, then $5x + 1$ =……..			
ⓐ zero	ⓑ 1	ⓒ 5	ⓓ 6

(11) If : $f(x) = x^2 + 7$, then $f(3)$ = ……..			
ⓐ 10	ⓑ 7	ⓒ 9	ⓓ 16

(12) If : $f(x) = x^3$ then $f(2) + f(-2)$ = ……..			
ⓐ 16	ⓑ zero	ⓒ -7	ⓓ 4

(13) If : $f(x) = 7x - \frac{1}{2}$, then $f(\frac{1}{2})$ =……..			
ⓐ 7	ⓑ $\frac{1}{2}$	ⓒ $\frac{7}{2}$	ⓓ 3

(14) The function f, where $f(x) = 5x$ is represented graphically by a straight line passes through the point … … ..			
ⓐ (5, 5)	ⓑ (0, 0)	ⓒ (0, 5)	ⓓ (5, 0)

(15) If : $f(x) = 4x + b$, $f(3) = 15$, then b =……..			
ⓐ 156	ⓑ 3	ⓒ 4	ⓓ -3

(16) If : (m, 13) satisfies the function f where $f(x) = 3x + 4$, then m =……			
ⓐ 6	ⓑ -6	ⓒ 3	ⓓ -3

(17) If : (2, b) satisfies the function f where $f(x) = 3x - 6$ then b=……..			
ⓐ Zero	ⓑ 7	ⓒ 9	ⓓ 2

(18) If: $f(x) = 5x + 4$ is represented graphically by a straight line passes through the point (3, b), then b = ……..			
ⓐ 5	ⓑ 4	ⓒ 3	ⓓ 19

Answer the following questions

1. If : x = { 0 , 1 , 2 , 3 , 4 , 5 , 6 } and R is a relation on x where a R b means " a is twice b " for all a ∈ x , b ∈ x , a ≠ b

   (1) Write R and represent it by an arrow diagram

   (2) Is (0 , 0) ∈ R

   (3) Is 2 R 4 ?

   (4) Find x if 6 R x

---

2. If : x = { 2 , 4 , 8 } , x = { 4 , 6 , 12 , 24 } , and R is a relation from x to Y such that a R b means " b >2 a " for all a ∈ x , b ∈ Y , write R and represent it by an arrow diagram and by a cartesian diagram

---

3. If : x = { 13 , 14 , 43 , 84 } , and R is a relation on x such that a R b means " two numbers a and b have the same unit digit " for all a ∈ x , b ∈ x Write R and represent it on a cartesian diagram

---

4. If : x = { 2 , 3 , 4 , 7 } , Y = { 1 , 2 , 3 , 4 , 7 , 8 } and R is a relation from x to Y where a R b means " a – b is a prime number " for all a ∈ x , b ∈ Y Write R and represent it andr by an arrow diagram

---

5. If : x = { 0 , 1 , 2 , 3 } , Y = { - 3 , – 2 , - 1 , 0 } and R is a relation from x to Y where a R b means " a is additive inverse of b " for all a ∈ x , b ∈ Y + write R and represent it by an arrow diagram and by a cartesian diagram . Is R a function ? why ?

---

6. If : x = { 2 , 5 , 8 } , Y = { 10 , 16 , 24 , 30 } and R is a relation from x to Y where a R b means " a is a factor of b " for all a ∈ x , b ∈ Y write R and represent it by an arrow diagram. Is R a function ? why ?

---

7) If : $x = \{ 1 , 3 , 4 , 5 \}$, $Y = \{ 1 , 2 , 3 , 4 , 5 , 6 \}$ and R is a relation from x to Y where a R b means " $a + b = 7$ " for all $a \in x$, $b \in Y$, write R and represent it by an arrow diagram and by a cartesian diagram, show that R is a function ? write its domain and its range

---

8) If : $x = \{ 1 , 2 , 3 \}$, $Y = \{ 1 , \frac{1}{2} , \frac{1}{3} , \frac{1}{5} \}$ and R is a relation from x to Y where a R b means " a is the multiplicative inverse of b " for all $a \in x$, $b \in Y$, write R and represent it by an arrow diagram and by a cartesian diagram . Is R a function ? why ?

---

9) If : $x = \{ 1 , 2 , 4 \}$, R is a relation on x such that "a is a multiple of b" for all $a \in x$, $b \in Y$ write R and represent it by an arrow diagram and by a cartesian diagram . Is R a function ? why ?

---

10) If : $x = \{ 2 , 3 , 4 \}$, $Y = \{ 3 , 4 , 5 , 6 , 7 , 8 \}$ and $f : x \rightarrow Y$ where $f(x) = 9 - x$ find the images of the elements of x and represent it by an arrow diagram .

---

11) If : $x = \{ 3 , 4 , 5 , 10 , 13 \}$, $Y = \{ 4 , 5 , 7 , 8 , 9 , 19 , 25 \}$ and R is a relation from x to Y such that a R b means " $b = 2a - 1$ " for all $a \in x$ and $b \in Y$:

(1) Write R

(2) Represent R by a cartesian diagram

(3) Find the value of x if $(X , 9) \in R$

---

12) If : $x = \{ 1 , 2 , 3 \}$, $Y = \{ 1 , 3 , 6 , 9 , 13 \}$ and R is a relation from x to Y where a R b means " $a = \frac{1}{3} b$ " for all $a \in x$, $b \in Y$, write R and show that it is a function , write its range

---

13) If : $x = \{ 3 , 5 , 7 , 9 \}$, $Y = \{ a : a \in N , 10 \leq a < 50 \}$ and R is a relation from x to Y , where $R = \{ (3 , 15) , (5 , 25) , (7 , 35) , (9 , 45) \}$

(1) What is the range of R ?

(2) Write a rule of R

14) If function f = { (1 , 3) , (2 , 5) , (3 , 7) , (4 , 9) , (5 , 11) }

(1) Write each of domain and range of f

(2) Write the rule of the function f

15) If : x = { 1 , 3 , 5 } and R is a function on x where R = { (a , 3) , (b , 1) , (1 , 5) } , then find the numerical value of the expression : a + b

16) Represent the following linear function graphically :

(1) F (x) = 3 x + 1

(2) F (x) = 2 – x

(3) F (x) = 5 x

(4) F (x) = - 2 x

17) Graph the function f where f (x) = 4 - x^2 in the interval [-3 , 3] , from the graph determine :

(1) The coordinates of the maximum value of function .

(2) The equation of the axis of symmetry .

18) Graph the function f where f (x)= x (6 – x) + 4 in the interval [- 1 , 7]

19) the straight line which represents the function f : $\mathbb{R} \to \mathbb{R}$ where f (x) = 6 x – a cuts y - axis at the point (b , 3) , then find the value of a and b

20) If f : $\mathbb{R} \to \mathbb{R}$ is represented by a straight line cuts y-axis at (b , 3) where f (x) = 6 x – a Find the value of 2a + 7b

Complete each of the following

1. If : $3a = 4b$, then $a : b = \ldots\ldots : \ldots\ldots$
2. If : $\frac{x}{3} = \frac{y}{5}$, than $\frac{3x}{5y} = \ldots\ldots\ldots$
3. If : $4x^2 - 12xy + 9y^2 = 0$ and $x \in \mathbb{R}, y \in \mathbb{R}, y \neq 0$, then $\frac{x}{y} = \frac{\ldots\ldots}{\ldots\ldots}$
4. If : $\frac{a}{b} = \frac{7}{2}$, then $\frac{a-b}{a+b} = \frac{\ldots\ldots}{\ldots\ldots}$
5. If : $y^2 - 6xy + 9x^2 = 0$, then $y \propto \ldots\ldots$
6. $\frac{x}{6} = \frac{y}{5} = \frac{z}{4} = \frac{\ldots\ldots\ldots}{11} = \frac{2y+z}{\ldots\ldots\ldots}$
7. If : 3 , 4 , c and 8 are proportional , then c = ……………
8. The proportional mean of $3ab^2$ and $27a^3b^2$ is ……..
9. If : 9 , $2x$, $\frac{1}{y^2}$ are proportional quantities , then $xy = \ldots\ldots$
10. If : 1 , x , 9 , y are in continued proportion , then x = ………, y = ………
11. If : $y = 3x$, then $y \propto \ldots\ldots$
12. If : $xy - 7 = 0$, then $y \propto \ldots\ldots$
13. If $y \propto x$ and the variable x took the two values x_1 and x_2 and the variable y took the two values y_1 and y_2 respectively , then $\frac{x_1}{x_2} = \frac{\ldots\ldots}{\ldots\ldots}$
14. If $y \propto \frac{1}{x}$ and the variable x took the two values x_1 and x_2 and the variable y took the two values y_1 and y_2 respectively , then $\frac{x_1}{x_2} = \frac{\ldots\ldots}{\ldots\ldots}$
15. If $y \propto x$ and $y = 2$ when $x = 4$, then $y = \ldots\ldots x$
16. If y varies inversely as x and $y = 2$ when $x = \frac{1}{2}$, then $y \ \frac{\ldots\ldots}{x}$
17. If $y \propto x$ and $y = 1$ when $x = 4$, then $y = \ldots\ldots$ when $x = 8$
18. If : $x^2y^2 - 4xy + 4 = 0$, then $y \propto \cdots\ldots\ldots\ldots$

Choose the correct answer from those given

(1) If : a , b , 2 and 3 are proportional , then $\frac{a}{b}$ = ……..			
ⓐ $\frac{2}{3}$	ⓑ $\frac{3}{2}$	ⓒ $\frac{3}{4}$	ⓓ $\frac{4}{3}$

(2) If : $\frac{x}{y} = \frac{z}{\ell}$ which of the following is true ?			
ⓐ $\frac{x}{\ell} = \frac{y}{z}$	ⓑ $\frac{x}{z} = \frac{\ell}{y}$	ⓒ $\frac{x}{y} = \frac{\ell}{z}$	ⓓ $\frac{x}{z} = \frac{y}{\ell}$

(3) The second proportion of the quantities 12 ab^2 , …… , 21 ab , 14 b^2 is …..			
ⓐ 8 ab^2	ⓑ 8 b^3	ⓒ 24 ab	ⓓ 24 b^2

(4) The third proportion of the two numbers 3 and 6 is …..			
ⓐ $\frac{1}{2}$	ⓑ 2	ⓒ 3	ⓓ 12

(5) If : 2 , 6 , x + 15 are proportional , then x = …………			
ⓐ 1	ⓑ 2	ⓒ 3	ⓓ 4

(6) If : $\frac{9}{a^2} = \frac{4}{b^2}$ (where a ≠ 0 and b ≠ 0) , then $\frac{a}{b}$ = ……….			
ⓐ $\frac{2}{3}$	ⓑ $\pm\frac{3}{2}$	ⓒ $\pm\frac{2}{3}$	ⓓ $\pm\frac{4}{9}$

(7) If : $\frac{a}{2} = \frac{b}{3}$, then $\frac{b-a}{b+a}$ equals ………..			
ⓐ $\frac{1}{5}$	ⓑ $\frac{1}{3}$	ⓒ $\frac{2}{5}$	ⓓ $\frac{3}{5}$

(8) If $\frac{x}{2} = \frac{y}{3} = \frac{4x-2y}{z}$, then z = ……….			
ⓐ -2	ⓑ $-\frac{1}{2}$	ⓒ $\frac{1}{2}$	ⓓ 2

(9) If : $\frac{a}{b} = \frac{c}{d} = \frac{e}{f}$ m (where m ∈ $\mathbb{R}^y$) , then $\frac{a\ c\ e}{b\ d\ f}$ equals …..			
ⓐ m	ⓑ 3m	ⓒ m^3	ⓓ 3 m^3

(10) The number which if we added to each of the numbers 1 , 3 , 7 , 15 respectively to be in continued is ……….

ⓐ 1	ⓑ 2	ⓒ 3	ⓓ 4

(11) The relation which represents direct variation between the two variable x and y is ……………

ⓐ $xy = 7$	ⓑ $y = x + 2$	ⓒ $\frac{x}{3} = \frac{4}{y}$	ⓓ $\frac{x}{5} = \frac{y}{2}$

(12) If $y \propto x$ and $x = 1$ at $y = 4$, then the constant of the variation equals …….

ⓐ 1	ⓑ -4	ⓒ $\frac{1}{4}$	ⓓ $-\frac{1}{4}$

(13) If y varies inversely as x and if $x = \sqrt{3}$ as $y = \frac{2}{\sqrt{3}}$, then the constant of variation equals………

ⓐ $\frac{1}{2}$	ⓑ $\frac{2}{3}$	ⓒ 2	ⓓ 6

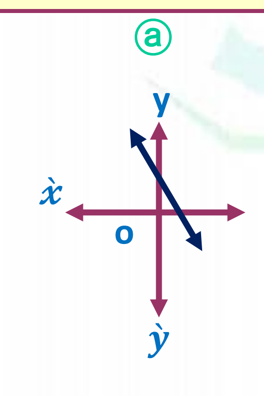
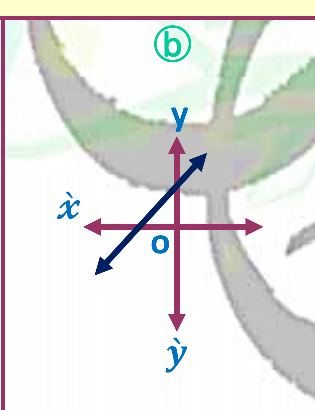
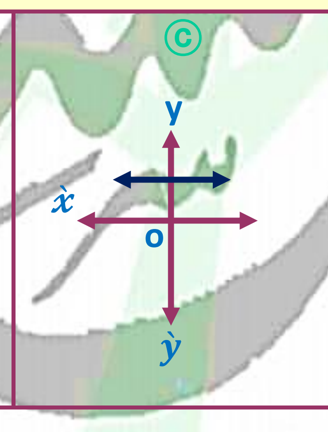
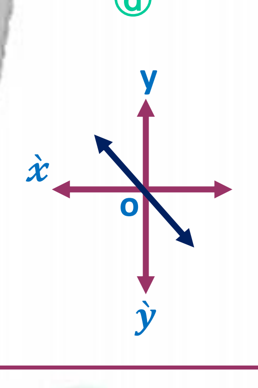
(14) If : $y - x = \frac{1}{x} - \frac{1}{y}$ *where* $x \neq y \neq 0$, *then* … … ….

ⓐ $y \propto x + 1$	ⓑ $y \propto x$	ⓒ $y \propto \frac{1}{x}$	ⓓ $y \propto \frac{1}{x^2}$

(15) If some of the total cost (y) for a certain trip is constant (a) and the other changes with the number of participants (x), which of the following relations is correct ?

ⓐ $y = a\,x$	ⓑ $y = \frac{a}{x}$
ⓒ $y = a + \frac{m}{x}$, (m is a constant $\neq 0$)	ⓓ $y = a + m\,x$, (m is a constant $\neq 0$)

(16) The graph which represent the direct variation between x and y is …….

ⓐ	ⓑ	ⓒ	ⓓ
			

Essay questions

1 If the following sets of numbers are proportional, then find the values of x

(1) $8 , x , 4 , 5$ (2) $11 , 3 , x , 6$ (3) $6 , 24 , 1 , x$

2 Find : $x : y : z$ in each of the following

(1) $\frac{x}{y} = \frac{3}{5}$ and $\frac{y}{z} = \frac{4}{7}$ (2) $\frac{x}{y} = \frac{4}{5}$ and $\frac{x}{z} = \frac{3}{7}$

3 If : $\frac{a}{b} = \frac{2}{5}$, then find the value of each of the following rations:

(1) $\frac{a+b}{b}$ (2) $\frac{a}{b-a}$ (3) $\frac{b-a}{b+a}$ (4) $\frac{7a-2b}{3a+2b}$

4 If : $\frac{a}{b-a} = \frac{c}{d-c}$, then prove that : a , b , c and d are proportional

5 If b is the middle proportional between a and c, then prove that:

(1) $\frac{a^2}{b^2} + \frac{b^2}{c^2} = \frac{2a}{c}$ (2) $\frac{a+b+c}{a^{-1}+b^{-1}+c^{-1}} = b^2$

6 If : $\frac{x}{3} = \frac{y}{4} = \frac{z}{5}$, then prove that :

(1) $\frac{2y-z}{3x-2y+z} = \frac{1}{2}$ (2) $\sqrt{3x^2 + 3y^2 + z^2} = 2x + y$

7 If : a -1 , a + 1 , b – 2 , b +2 are in proportion , then find $\frac{a}{b}$, then prove that : $\frac{a+b}{a+b-3} = \frac{3a}{5a-b-3}$

(8) If : $\frac{a}{b} = \frac{1}{3}$, $\frac{a}{c} = \frac{1}{9}$ *and* $a + b + c = 26$ *, then find each of a , b and c*

(9) If x , y , z , ℓ are proportional quantities , then prove that:

(1) $\left(\frac{x - y}{z + \ell}\right)^2 = \frac{2x^2 - 3y^2}{2z^2 - 3\ell^2}$

(2) $\sqrt[3]{\frac{5x^3 - 3z^3}{5y^3 - 3\ell^3}} = \frac{x+z}{y+\ell}$

(10) If : $\frac{x+y}{\ell + m} = \frac{y+z}{m+n} = \frac{z+x}{n+\ell}$, then prove that : $\frac{x}{\ell} = \frac{y-x}{m-\ell}$

(11) If : $\frac{x}{2a+b} = \frac{y}{2b-c} = \frac{z}{2c-a} =$ *, then prove that* : $\frac{2x+y}{4a+4b+c} = \frac{2x+2y+z}{3a+6b}$

(12) If : $\frac{x+y}{7} = \frac{y+z}{5} = \frac{z+x}{8}$, then prove that : $\frac{x+y+z}{x-z} = 5$

(13) Find the number that should be added to each of the numbers: 7, 9, 12 , 15 to be proportional .

(14) Two positive integer numbers, the ratio between them is 3 : 7 and if we subtract 5 from each of them the ratio becomes 1 : 3 , find the two numbers.

(15) Find the positive number that if we add its square to each term of the ratio 7: 11 it becomes 4: 5

(16) If y varies directly as x and y = 10 when $x = 7$, find x when y = 20

17) If y varies inversely as x and y = 10 when x = 3 , find y when x = 5

18) If $y \propto x$ and y = 20 when x = 7 find the relation between x and y then find the value of y when x = 14

19) If $y \propto \frac{1}{x}$ and $x = 2\frac{4}{5}$ when $y = \frac{4}{7}$, then find the relation between x and y then find also the value of y when $x = 3\frac{1}{5}$

20) If y = 3 + a and $a \propto \frac{1}{x}$ if y = 5 when x = 1 , then find the relation between x and y and find y when x = 2

21) Let y = a + 7 and $a \propto \frac{1}{x^2}$ if a = 18 when $x = \frac{2}{3}$ find the relation between y and x then deduce the value of y when x = 6

22) If , $\frac{12x - y}{7x - z} = \frac{y}{z}$ then prove that : $y \propto z$

23) From the data of the following table answer the following questions

x	2	4	6
y	6	3	2

(1) Identify the kind variation whether it is direct or inverse

(2) Find the constant of variation

(3) Find the value of y when x = 3 (4) Find the value of x when $y = 2\frac{2}{5}$

Complete the following

1. The resources of collecting data are……………and………………..
2. The personal interview is a……… resource of collecting data.
3. The data of the students that are registered in students affair is a………….. resource of collection data.
4. Central agency for public mobilization and statistics is a……… resource of collecting data.
5. Direct observing is a……..... resource of collecting data.
6. The suitable method for examining blood of a patient is a………..
7. The suitable method for checking the production of a factory is…………
8. The suitable method to know the population is………
9. The suitable method to know the ratio of absence in one of the schools is……
10. If the society is divided into illiterates and literates, carries of mediate, intermediate and high qualifications, the choosen sample for making a research is called…………………..
11. Dispersion measurements are………and………………
12. The simplest measure of the dispersion is…….
13. The difference between the greatest value and the smallest value in a set of values is called…………..
14. The positive square root of the average of squares of deviations of the values from their mean is called………....
15. If the standard deviation equals zero, then…………….
16. The dispersion to any set equally values equals…………
17. The mean of the set of the values: 7,5,9, 11 and 3 is……….

18. The range of the set of the values: 6,5,9,4 and 12 is................

19. If the standard deviation for nine of the values is 3, then : $\Sigma (x - \overline{x})^2$ for these values is …………

Choose the correct from those given :

(1) ..... is a secondary resource of collecting data.	
ⓐ Personal interview	ⓑ Questionnaires
ⓒ Data base of the employees	ⓓ Observing and measuring

(2) …………is a primary resource of collecting data.	
ⓐ Central agency for statistics	ⓑ Questionnaires
ⓒ Data of the school pupils in the previous year	
ⓓ Data of the employees in one of the companies	

(3) The method of mass population is suitable for...........
ⓐ searching the formation of the sand of the Western Desert.
ⓑ examining the sweetness of water for one of the wells.
ⓒ finding out the ratio of finding a metal in one of the mines.
ⓓ getting the number of the students who had the full mark in maths exam in a class.

(4) Choosing a sample from the society's layers in statistics is called. ....sample.			
ⓐ biased	ⓑ layer	ⓒ international	ⓓ cluster

(5) The mean of the values: 3,5,7 and 9 equals			
ⓐ 9	ⓑ 3	ⓒ 8	ⓓ 6

(6) The range of the set of values: 8,3, 10,5 and 1.2. ....

ⓐ 3	ⓑ 9	ⓒ 10	ⓓ 4

(7) The most repeated value in a set of values represents.................

ⓐ the median	ⓑ the range.	ⓒ the mode.	ⓓ the mean.

(8) If the mean of numbers: 3k-3, 3k-1, 2k + 1, 2k + 3 and 2k + 5 is 13

, then k = ...

ⓐ -5	ⓑ 10	ⓒ 5	ⓓ $\frac{1}{5}$

(9) $\frac{\text{sum of values}}{\text{number of these values}}$ = ...

ⓐ range	ⓑ standard deviation	ⓒ Mean	ⓓ mode

(10) If $\Sigma(x - \overline{x})^2 = 36$ of a set of values and the number of these values = 9

, then the standard deviation =

ⓐ 2	ⓑ 18	ⓒ 27	ⓓ 4

Third Essay questions

(1) The following table shows the frequency distribution of the number of students who won in an art competition from a school having 20 classes

Number of students	0	1	2	3	4	5	total
Number of classes	1	3	5	6	3	2	20

Find the mean and the standare deviation of the number of students

" 2.6"

2) The following table represents the frequency distribution of sets of temperature degrees in some of world cities

Sets of temperature degrees	5 -	15 -	25 -	35 -	45 -
frequency	7	9	11	15	8

Find the mean and the standard deviation of the temperature degrees.

" 31.6 , 12.9 "

---

3) Calculate the mean and standard deviation of the following data :

(1) 65 , 61 , 70 , 54 , 70 , 76 , 70 " 68 , 4.6 "

(2) 23 , 12 , 17 , 13 , 15 , 16 , 8 , 9 , 37 , 10 " 16 , 8.2 "

Complete the following

1. $46° \, 36` \, 24`` = \cdots \dots \dots$ in degrees.
2. $44.125° = \cdots \dots \dots$ in degrees , minutes , seconds
3. If $\tan\theta = 1.42$ where θ is the measure of an acute angle, then $\theta =$
4. If $\sin\theta = 0.63$ where is the measure of an acute angle, then $\theta = \dots$
5. If $\sin X = \frac{1}{2}$ where X is an acute angles then $m(\angle x) = \dots\dots$
6. If $\cos\frac{x}{2} = \frac{\sqrt{3}}{2}$ where x is an acute angle then $m(\angle x) = \cdots$
7. $\sin 60° + \cos 30° - \tan 60° = \cdots \dots \dots$
8. $\cos 60° + \sin 30° - \tan 45° = \cdots \dots$
9. $2 \sin 30° \times \cos 60° - \tan 45° =$
10. $\sin^2 30° + \cos^2 30° =$
11. If $\tan(x + 10)° = \sqrt{3}$ where x is an acute angle then $m(\angle x) = \dots\dots$
12. If $\tan 3x = \sqrt{3}$ where x is an acute angle, then $m(\angle x) =$

Choose the correct from those given :

(1) $4 \cos 30° \tan 60° =$			
ⓐ 3	ⓑ $2\sqrt{3}$	ⓒ 6	ⓓ 12

(2) If $\cos 2x = \frac{1}{2}$ where x is an acute angle, then $m(\angle x) =$			
ⓐ 15°	ⓑ 30°	ⓒ 45°	ⓓ 60°

(3) If $\tan \frac{3x}{2} = 1$ where x is an acute angle then $m(\angle x) =$			
ⓐ 10°	ⓑ 30°	ⓒ 45°	ⓓ 60°

(4) $2 \tan 45 - \frac{1}{\cos 60} =$			
ⓐ zero	ⓑ $\frac{1}{2}$	ⓒ $\frac{\sqrt{3}}{2}$	ⓓ 1

(5) If $\cos \frac{x}{2} = \frac{\sqrt{3}}{2}$ = where x is an acute angle then $\sin x =$			
ⓐ $\frac{1}{2}$	ⓑ $\frac{1}{\sqrt{3}}$	ⓒ $\frac{2}{\sqrt{3}}$	ⓓ $\frac{\sqrt{3}}{2}$

(6) In ΔABC: If $m(\angle A) = 85°$, $\sin B = \cos B$, then $m(\angle C) =$			
ⓐ 30°	ⓑ 45°	ⓒ 50°	ⓓ 60°

Third Essay questions

1 Find the value of each of the following :

(1) (cos 30°- cos 60°) (sin 30° + sin 60°)

(2) $\frac{1}{4}\sin^2 45° \tan^2 60° - \frac{1}{3}\sin 60° \tan^2 30°$

(3) $\sin 45° \cos 45° + \sin 30° \cos 60° - \cos^2 30°$

(4) $\frac{\sin 30° \cos 45° + \cos 30° \sin 45°}{\sin 45° \cos 60° + \cos 45° \sin 60°}$

2 Prove that :

(1) $\cos 60° = 2\cos^2 30° - 1$

(2) $\tan 60° (1 - \tan^2 30°) = 2\tan 30°$

(3) $\tan^2 60° - \tan^2 45° = 4\sin 30°$

(4) $\tan 60° = \frac{2\tan 30°}{1-\tan^2 30°}$

(5) $\frac{\tan^2 30° \tan 45° \tan 60° + \tan 30° \tan 60°}{\sin^2 60° - \tan 45° \sin 30°} = 8$

3 Find the value of x in each of the following :

(1) $x \cos 30° = \tan 60°$

(2) $x \sin^2 45° - \tan^2 60°$

(3) $4x = \cos^2 30° \tan^2 30° \tan^2 45°$

(4) $x \sin 30° \cos^2 45° = \cos^2 30°$

(5) $x \sin 45° \cos 45° \tan 60° = \tan^2 45° - \cos^2 60°$

(6) $\tan x = \frac{\sin 30° \cos 45° + \sin 45° \cos 30°}{\sin 45° \cos 60° + \sin 45° \sin 60°}$ where x is the measure of an acute angle .

---

4 Find m ($\angle\theta$) where θ is an acute angle :

(1) $\sin^2 45° = \cos\theta \tan 30°$

(2) $2\sin\theta = \tan^2 60° - 2\tan 45°$

(2) $\sin\theta = \sin 45° \cos 30° + \cos 45° \sin 30°$

(3) $\sin\theta \sin^2 60° = 3\sin^2 45° \cos^2 45° \cos 60°$

(4) $\tan\theta = 3(\sin 30° + \cos 30°) - 4(\sin^3 60° + \cos 60°)$

(5) $3\tan^2\theta = 4\sin^2 30° + 8\cos^2 60°$

---

5 In the opposite figure :

ABCD is a rectangle where AB = 15 cm

AC = 25 cm <u>Find :</u>

(1) m ($\angle$ ACB)

(2) The surface area of the rectangle ABCD



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6 In the opposite figure :

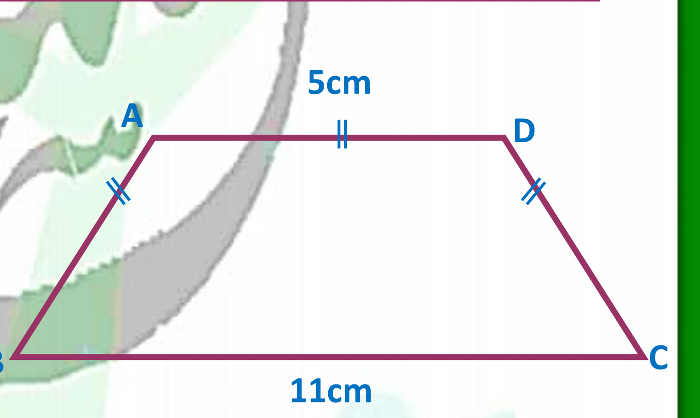
ABCD is an isosceles trapezium where

: AB = AD = DC = 5 cm . BC= 11 cm.

Find :

(1) m ($\angle$B) + m ($\angle$A)

(2) The area of the trapezium ABCD



Choose the correct answer from those given

(1) *The distance between the point* $(4 - 3)$ *and the* $x -$ *axis equals*			
ⓐ -3	ⓑ 3	ⓒ 4	ⓓ 5

(2) A circle of centre at the origin point and its radius length is 2 unit length which of the following points belongs to the circle ?			
ⓐ (1 ,2)	ⓑ (-2 , 1)	ⓒ ($\sqrt{3}$, 1)	ⓓ ($\sqrt{2}$, 1)

(3) If: $(4 - 3)$is the midpoint of AB where A $(3 , \acute{4})$then the coordinates of B is			
ⓐ (5 , -2)	ⓑ (2 , 5)	ⓒ (5 , 2)	ⓓ (3.5 , - 3.5)

(4) The straight line whose equation is $2x - 3y - 6 = 0$ intercepts from the $y -$ axis a part of length			
ⓐ - 6	ⓑ - 2	ⓒ $\frac{2}{3}$	ⓓ 2

(5) If the two straight lines: $3x - 4y - 3 = 0$ und $kx + 3y - 8 = 0$ are perpendicular then k =			
ⓐ - 4	ⓑ - 3	ⓒ 3	ⓓ 4

(6) If the two straight lines: $x + y = 5$ and $kx + 2y = 0$ are parallel, then k =			
ⓐ - 2	ⓑ - 1	ⓒ 1	ⓓ 2

(7) The area of the triangle bounded by the straight lines: $3x - 4y = 12, x = 0$ and $y = 0$ in square unit equal			
ⓐ 6	ⓑ 7	ⓒ 12	ⓓ 15

(8) $\overline{AB}$ is a straight line passing through the two points $(2 , 5)$and $(5 , 2)$ which of the following points ϵ $\overline{AB}$			
ⓐ(1 , 6)	ⓑ (2 , 3)	ⓒ (0 , 0)	ⓓ (3 , -4)

(9) *The points* $(0 , -0)$ $(3 , 0)$ *and* $(0 , 4)$	
ⓐ form an obtuse-angled triangle.	ⓑ form an acute-angled triangle.
ⓒ form a right-angled triangle.	ⓓ are collinear.

(10) If: A (0 , 0), B (5 + 7) and C (5 + h) are the vertices of a right – angled triangle at C then h =			
ⓐ zero	ⓑ 5	ⓒ 7	ⓓ -5

Essay questions

(1) Find the length of $\overline{MN}$ in each of the following cases :

(1) M (2 , -1) , N (5 , 3) (2) M (-3 , -5) N (5 , 1)

(3) M (7 , -8) N (2 , 4) (4) M (7 , -3) N (0 , 4)

---

(2) Find the coordinates of the midpoint of $\overline{AB}$ in each of the following :

(1) A (2 , 4) , B (6 , 0) (2) A (7 , -5) , B (-3 , 5)

(3) A (-3 , 6) , B (3 , -6) (4) A (7 , -6) , B (-1 , 0)

---

(3) If C is the midpoint of $\overline{AB}$ find x and y in each of the following cases :

(1) A (1 , 5) B (3 , 7) , C (x , y) (2) A (-3 , y) , B (9 , 11) , C (x , -3)

(2) A (x , -6) , B (9 , -11) , C (-3 , y)

(3) A (x , 3) , B (6 , y) , C (4 , 6)

---

(4) Find the slope of the straight line which makes with the positive direction of the X – axis a positive angle of measure:

(1) 30° (2) 45° (3) 60°

---

(5) Using the calculator find the measure of the positive angle which is made by the straight line whose slope is m with the positive direction of the X-axis in each of the following cases :

(1) m= 0.3673 (2) m = 1.0246 (3) m = 3.1648

6. Prove that the points: A (3 , -1) , B (-4 , 6) , C (2 , -2) which belong to an orthogonal cartesian coordinates plane lie on the circle whose centre M (-1 , 2) , then find the circumference of the circle.

---

7. Find the value of a in each of the following :

(1) If the distance between the two points (a , 7) and (-2 , 3) equals 5

(2) If the distance between the two points (a , 7) and (3 a , -1 , -5) equals 13

---

8. If : A (x , 3) , B (3 , 2) , C (5 , 1) and if AB = BC find the value of x

---

9. If the points (0 , 1) , (a , 3) , (2 , 5) are collinear find the value of a

---

10. If the distance between the point (x , 5) and the point (6 , 1) equals $2\sqrt{5}$, find the value of x

---

11. In which of the following cases , the points A , B and C are collinear ? Explain your answer.

(1) A (-1 , 5) , B (0 , -3) , C (2 , 1)

(2) A (-2 , 1) B (2 , 3) , C (4 , 4)

(3) A (0 , 2) B (4 , 8) , C (6 ,11)

---

12. Identify the type of the triangle whose vertices are A (-2 , 4) , B (3 , -1) , C (4 , 5) due to its sides lengths.

---

13. Prove that triangle whose vertices A (5 , -5) , B (-1 , 7) , C (15 , 15) is right angled at B , then calculate its area.

14. Prove that the points: (5 , 3) , (6 , -2) , (1 , -1) , (0 , 4) are vertices of a rhombus then find its area.

---

15. Prove that the points : A (- 2 , 5) , B (3 , 3) , C (-4 , 2) are not collinear and if D (-9 , 4) prove that the figure ABCD is a parallelogram

---

16. Let A (5 , -6) , B (3 , 7) and C (1 , -3) , find the equation of the straight line which passes through A and the midpoint of $\overline{BC}$

---

17. Find the equation of the straight line passing through the point (3 , -5) and parallel to the straight line: $x + 2y - 7 = 0$

---

18. Find the equation of the straight line which intercepts the two axes two positive parts of lengths 4 and 9 for x and y – axis respectively.

---

19. If : A (1 , -6) , B (9 , 2) find the coordinates of the points which divide $\overline{AB}$ into four equal parts in length.

---

20. Prove that the points : A (6 , 0) , B (2 , -4) and C(-4 , 2) are vertices of a right-angled triangle at B , then find the coordinates of the point D which makes the figure ABCD a rectangle.

---

21. If the points: A (3 , 2) , B (4 , -3) , C (-1 , -2) , D (-2 , 3) are vertices of a rhombus find :

(1) The coordinates of the point of intersection of its two diagonals.

(2) The area of the rhombus ABCD

22 If: A (-1 , -1) , B (2 , 3) , C (6 , 0) , D (3 , -4) are four points on an orthogonal cartesian coordinates plane. Prove that $\overline{AC}$ and $\overline{BD}$ bisect each other. What is the name of this figure ?

---

23 ABCD is a parallelogram where A (3 , 4) , B (2 , -1) , C (-4 , -3) , find the coordinates of point D , then find the coordinates of point E such that the figure ABCE becomes a trapezium in which $\overline{AE}$ // $\overline{BC}$, AE = 2 BC

---

24 If the straight line L_1 passes through the two points (3 , 1) and (2 , k) , and the straight line L_2 makes with the positive direction of the X-axis a positive angle of measure 45 , find the value of k if :

(1) $L_1 // L_2$ (2) $L_1 \perp L_2$

---

25 Using the slope prove that the points : A (-1 , 3) , B (5 , 1) C (6 , 4) , D (0 , 6) are vertices of a rectangle.

المراجعة رقم (4)

الترم الاول





Revision for Algebra and Statistics

First: Algebra.

The Cartesian product of two finite sets and representing it.

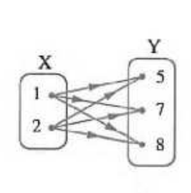
If $X = \{1,2\}$, $Y = \{5,7,8\}$, then :



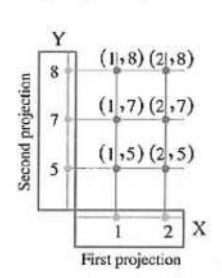
$X \times Y$

is the set of all ordered pairs whose first projection of each of them belongs to X and the second projection of each of them belongs to Y.

i.e. $X \times Y = \left\{ \begin{matrix} (1,5), (1,7), (1,8), \\ (2,5), (2,7), (2,8) \end{matrix} \right\}$



The arrow diagram

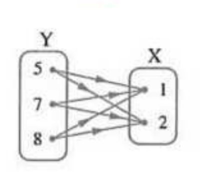


The graphical diagram (The Cartesian diagram)

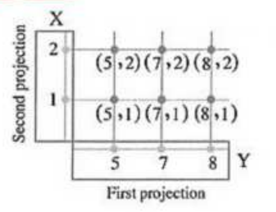
$Y \times X$

is the set of all ordered pairs whose first projection of each of them belongs to Y and the second projection of each of them belongs to X.

i.e. $Y \times X = \left\{ \begin{matrix} (5,1), (5,2), (7,1), \\ (7,2), (8,1), (8,2) \end{matrix} \right\}$



The arrow diagram

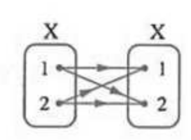


The graphical diagram (The Cartesian diagram)

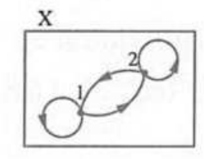
$X \times X$

is the set of all ordered pairs whose first projections and second projections belong to X.

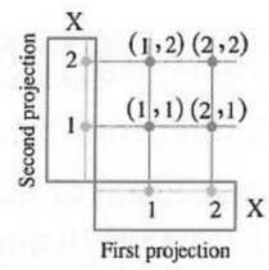
i.e. $X \times X = \{(1,1), (1,2), (2,1), (2,2)\}$



The arrow diagram



The arrow diagram



The graphical diagram (The Cartesian diagram)

Remarks.

(1) $X \times Y \neq Y \times X$, where $X \neq Y$

(2) $n(X \times Y) = n(Y \times X) = n(X) \times n(Y)$ where n is the number of elements

(3) $n(X \times X) = n(X^2) = [n(X)]^2$ (4) $X \times \varnothing = \varnothing \times X = \varnothing$

The relation and its representing

•*The relation from the set X to the set Y is a connecting joining some or all the elements of X with some or all the elements of Y.*

If R is a relation from the set X to the set Y, then:

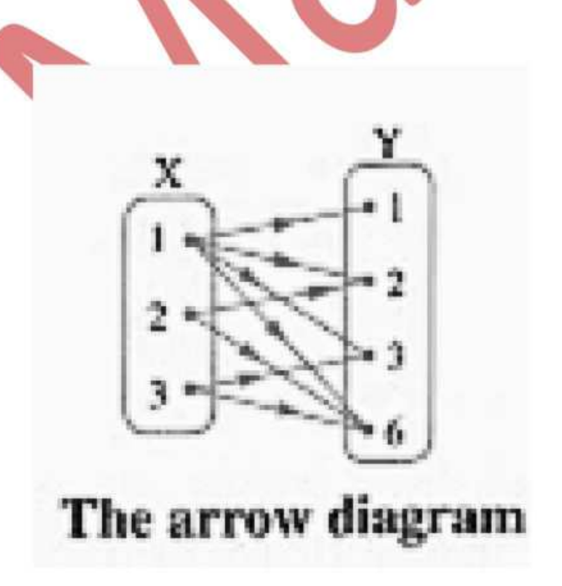
1. *R is a set of ordered pairs where the first projection of each belongs to X and the second projection belongs to Y.*
2. $R \subset X \times Y$
3. *The relation can be represented by an arrow diagram or by a Cartesian diagram (graphically) If R is a relation from X to X, then R is a relation on X and* $R \subset X \times X$

Example:

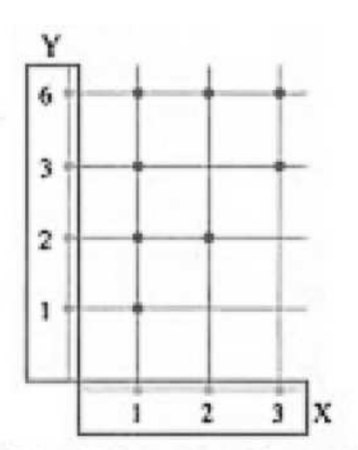
If $X = \{1,2,3\}$, $Y = \{1,2,3,6\}$ *and R is a relation from X to Y where "a R b" means "a is a factor of b" for each* $a \in X, b \in Y$ *then write R and represent it by an arrow diagram and a Cartesian diagram.*

Solution

$R = \{(1,1), (1,2), (1,3), (1,6), (2,2), (2,6), (3,3), (3,6)\}$



The arrow diagram



The Cartesian diagram

The function

A relation from X to Y is said to be a function if :

1. *Each element of the set X appears only once as a first projection in one of the ordered pairs of the relation.*

2. *Each element of the set X has one and only one arrow going out of it to one element of Y in the arrow diagram which represents the relation.*

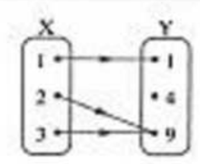
3. *Each vertical line has one and only one point lying on it of the points which represent the relation in the Cartesian diagram which represents the relation.*

If f is a function from the set X to the set Y is written as f: X $\rightarrow$ Y, then :

1- *X is called the domain of the function f*
2- *Y is called the codomain of the function f*
3- *The set of images of the elements of the set X by the function f is called the range of the function f which is a subset of the codomain Y.*

For example

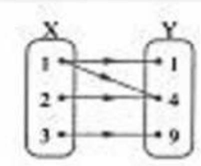
If X = {1,2,3} , Y = {1,4,9} then the following diagrams show some of the relations from X to Y and we note which of the following relations represent a function from X to Y and which does not represent:



Note : Going out only one arrow from each element of the elements of X

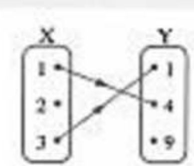
Then : The relation is a function from X to Y

- The domain = {1 , 2 , 3}
- The range = {1 , 9}



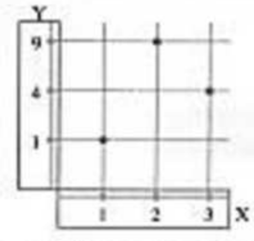
Note : Going out two arrows from the element 1 in X

Then : The relation is not a function from X to Y



Note : There are not arrows going out from the element 2 in X

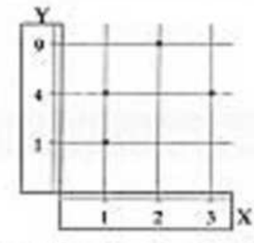
Then : The relation is not a function from X to Y



Note : Each vertical line has only one point lying on it

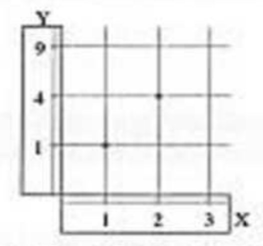
Then : The relation is a function from X to Y

- The domain = {1 , 2 , 3}
- The range = {1 , 4 , 9}



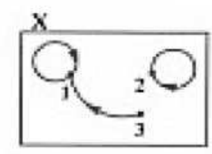
Note : There are two points lying on the vertical line at the element 1 in X

Then : The relation is not a function from X to Y



Note : There is not a point lying on the vertical line at the element 3 in X

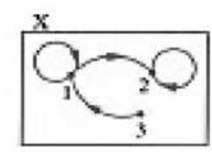
Then : The relation is not a function from X to Y



Note : Going out only one arrow from each element of the elements of X

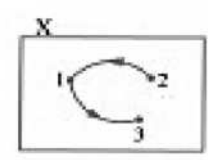
Then : The relation is a function on X

- The domain = {1 , 2 , 3}
- The range = {1 , 2}



Note : Going out two arrows from the element 1 in X

Then : The relation is not a function on X



Note : There are not arrows going out from the element 3 in X

Then : The relation is not a function on X

The polynomial functions

The polynomial function is a function whose rule is a term or an algebraic expression in condition that the following should be identified:

1- Each of the domain and the codomain of the function is the set of real numbers.

2- The power (The index) of the variable X in any of its terms is a natural number with noticing that the degree of the function is the highest power of the variable X.

For example:

The function f: f(x) = 3 is a polynomial function of zero degree.

The function f: f(x) = 2X+1 is a polynomial function of the first degree.

The function f: f(x) = $x^3 - 5x^2 + 1$ is a polynomial function of the third degree.

While :

The function f : f (x) = $\frac{1}{x^2} + x^2$ is not a polynomial function because : $\frac{1}{x^2} = x^{-2}$

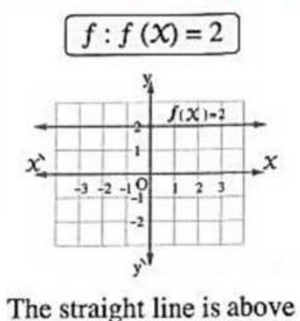
i.e. The index of the symbol X is not a natural number.

The graphical representation of the polynomial function.

The constant function

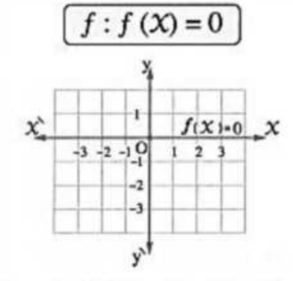
The function f: R ⟶ R where f (X) = b , b ∈ R is represented by a straight line parallel to X-axis and intersects y-axis at the point (0, b)

f : f (X) = 2



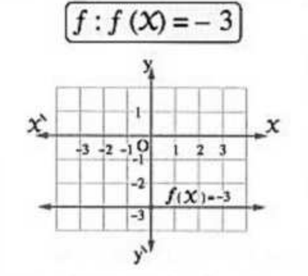
The straight line is above X-axis and passes through the point (0 , 2) (is of zero degree)

f : f (X) = 0



The straight line is coincident with X-axis and passes through the point (0 , 0) (has not degree)

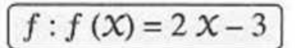
f : f (X) = – 3



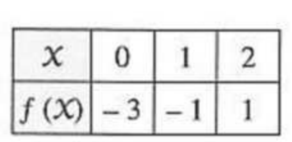
The straight line is below X-axis and passes through the point (0 , – 3) (is of zero degree)

The linear function

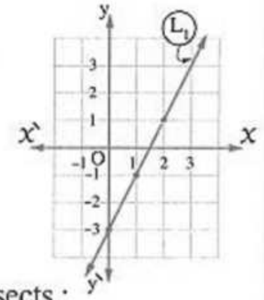
The function f: R ⟶ R where f (x) = ax+b, a ∈ R-{0}, b ER is called a linear function (function of the first degree) and is represented by a straight line intersecting y-axis at (0, b) and X-axis at ($\frac{-b}{a}$,0).



$f : f(x) = 2x - 3$



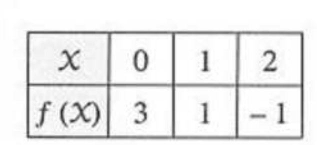
x	0	1	2
$f(x)$	−3	−1	1



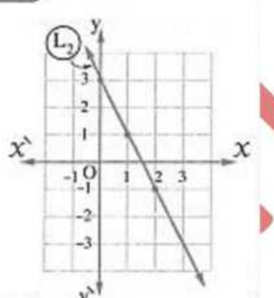
The straight line L_1 intersects :

- x-axis at $\left(1\frac{1}{2}, 0\right)$
- y-axis at $(0, -3)$

$f : f(x) = 3 - 2x$



x	0	1	2
$f(x)$	3	1	−1



The straight line L_2 intersects :

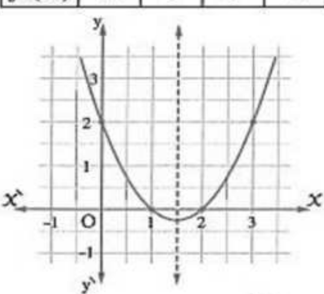
- x-axis at $\left(1\frac{1}{2}, 0\right)$
- y-axis at $(0, 3)$

The quadratic function

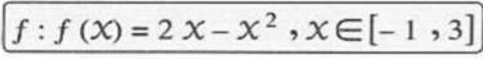
The function f: R ⟶ R where f (x) = ax²+bx+c , a , b and c ∈ R, a≠ 0 is called a quadratic function and it is a polynomial function of the second degree and it is represented by a curve whose vertex is ($\frac{-b}{2a}$, $f\left(\frac{-b}{2a}\right)$)

$f : f(x) = x^2 - 3x + 2 , x \in [0 , 3]$

x	0	1	2	3
$f(x)$	2	0	0	2

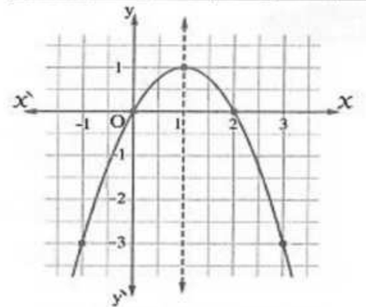


- The vertex of the curve = $\left(\frac{3}{2}, -\frac{1}{4}\right)$
- The minimum value of the function = $-\frac{1}{4}$
- The equation of line of symmetry : $x = \frac{3}{2}$



$f : f(x) = 2x - x^2 , x \in [-1 , 3]$

x	−1	0	1	2	3
$f(x)$	−3	0	1	0	−3



- The vertex of the curve = $(1 , 1)$
- The maximum value of the function = 1
- The equation of line of symmetry : $x = 1$

The ratio and its properties.

- *The ratio between the two real numbers a and b is written as* $\frac{a}{b}$ *or a:b and a is called the antecedent of the ratio, b is called the consequent and a, b are called the two terms of the ratio.*

- *The value of the ratio does not change if each of its terms is multiplied or divided by the same non-zero real number.*

- *The value of the ratio changes if we add or subtract (to or from) each of its two terms the same non-zero real number.*

- *If the ratio between two numbers is ab, then: The first number = am , The second number = bm, m* $\neq 0$

Example

Two numbers, their sum is 28 and the ratio between them is 3:4, what are the two numbers?

Solution

Let the two numbers be 3 m, 4 m

3 m + 4 m = 28 *7 m = 28* *m= 4*

The two numbers are: 3 x 4 and 4 x 4

i.e. 12 and 16 .

The proportion

The proportion is the equality of two ratios or more.

If $\frac{a}{b} = \frac{c}{d}$ *then a, b, c and d are proportional quantities.*

If a, b, c and d are proportional quantities, then $\frac{a}{b} = \frac{c}{d}$

The properties of the proportion.

Property 1 :

If $\frac{a}{b} = \frac{c}{d}$ *then* $a \times d = b \times c$

i.e. the product of the extremes = the product of the means.

Example *Find the fourth proportional of the quantities : 3,4 and 27*

Let the fourth proportional be X

The quantities: 3,4,27 and X are proportional

$\frac{3}{4} = \frac{27}{x}$ $\qquad 3 \times X = 4 \times 27$

The fourth proportional = 36.

Property 2 :

If $a \times d = b \times c$, *then* $\frac{a}{b} = \frac{c}{d}$

Also, each of the following proportions is correct:

$\frac{a}{c} = \frac{b}{d}$, $\frac{d}{b} = \frac{c}{a}$, $\frac{b}{a} = \frac{d}{c}$.

Example

If $\frac{x+3y}{2x-y} = \frac{4}{3}$ *then find the ratio X: y.*

$\frac{x+3y}{2x-y} = \frac{4}{3}$, $3(X+3y) = 4(2x - y)$

$3X + 9y = 8X - 4y$, $13y = 5x$, $X : y = 13 : 5$

Property 3 :

If $\frac{a}{b} = \frac{c}{d}$, then $\frac{a}{c} = \frac{b}{d}$

i.e. $\frac{The\ antecedent\ of\ the\ first\ ratio}{The\ antecedent\ of\ the\ second\ ratio} = \frac{The\ consequent\ of\ the\ first\ ratio}{The\ consequent\ of\ the\ second\ ratio}$

For example:

If $\frac{a}{4} = \frac{b}{3}$, then $\frac{a}{b} = \frac{4}{3}$ or $\frac{b}{a} = \frac{3}{4}$

Property 4:

If $\frac{a}{b} = \frac{c}{d}$, then a = cm, b = dm where m is a constant ≠ 0.

Example

If a: b=3:5 , then find the ratio 20 a -7b : 15 a+ b.

$\frac{a}{b} = \frac{3}{5}$

a= 3 m , b=5 m where m ≠0

Substituting by a and b in terms of m

$\frac{20\ a-7b}{15\ a+b} = \frac{60\ m-35\ m}{45m+5\ m} = \frac{25\ m}{50\ m} = \frac{1}{2}$.

Remark

If a, b, c and d are proportional quantities and we assume that : $\frac{a}{b} = \frac{c}{d} = m$

then a = bm , c = dm

For example:

If $\frac{a}{b} = \frac{c}{d} = \frac{3}{4}$ *then* $a = \frac{3}{4}b$, $c = \frac{3}{4}d$

Generally : If a,b,c,d,e,f,... are proportional quantities and we assume that:

$\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \cdots = m$ *, then a = bm, c= dm , e = fm ,..*

Example.

If a,b,c and d are proportional quantities, prove that :

1- $\frac{2a+3c}{7a-5c} = \frac{2b+3d}{7b-5d}$ 2- $\frac{a+c}{b+d} = \frac{a^2+c^2}{ab+cd}$

Solution

Let $\frac{a}{b} = \frac{c}{d} = m$, $a = bm$, $c = dm$

1- L.H.S. $= \frac{2\,bm+3\,dm}{7\,bm-5dm} = \frac{m\,(2b+3d)}{m\,(7b-5d)} = \frac{2b+3d}{7b-5d} =$ R.H.S

2- $\frac{a+c}{b+d} = \frac{bm+dm}{b+d} = \frac{m\,(b+d)}{b+d} = m$ (1)

$\frac{a^2+c^2}{ab+cd} = \frac{(bm)^2+(dm)^2}{bm\times b+dm\times d} = \frac{b^2m^2+d^2m^2}{b^2m+d^2m} = \frac{m^2\,(b^2+d^2)}{m\,(b^2+d^2)} = m$ (2)

From (1) and (2), we deduce that : $\frac{a+c}{b+d} = \frac{a^2+c^2}{ab+cd}$

Property 5 :

$\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \cdots$ and m_1 , m_2 , m, ... Are non-zero real numbers,

Then $\frac{m_1 a+m_2c+m_3e+\cdots}{m_1 b+m_2d+m_3f+\cdots}$ =one of given ratios

Example :

If $\frac{a+3b}{x+5y}=\frac{3b+5c}{5y+7z}=\frac{5c+a}{7z+x}$, prove that : $\frac{a}{3b}=\frac{x}{5y}$.

Solution

Multiplying the two terms of 2nd ratio by (-1) and adding the antecedents and consequents of the three ratios:

$\therefore \frac{a+3b-3b-5c+5c-a}{x+5y+5y+7z-7z-x}=\frac{2a}{2x}=\frac{a}{x}$ = one of the given ratios. (1)

Multiplying the two terms of 3rd ratio by (-1) and adding the antecedents and consequents of the three ratios :

$\frac{a+3b+3+5c-5c-a}{x+5y+5y+7z-7z-x}=\frac{6b}{10}=\frac{3b}{5y}$= one of the given ratios (2)

From (1) and (2), we deduce that : $\frac{a}{x}=\frac{3b}{5y}$ $\therefore \frac{a}{3b}=\frac{x}{5y}$.

The continued proportion :

The quantities a, b and c are said to be in continued proportion if : $\frac{a}{b} = \frac{b}{c}$

a is called the first proportional, c is called the third proportional and b is called the middle proportional (proportional mean).

$\because \frac{a}{b} = \frac{b}{c}$ $\therefore b^2 = ac$ $\therefore b = \pm\sqrt{ac}$

The middle proportional between two quantities = $\pm\sqrt{\text{the product of the two quantities.}}$

Notice that :

The two quantities a and c should be either positive together or negative together.

If $\frac{a}{b} = \frac{b}{c} = \frac{c}{d}$ = m, then 1) c =dm

2) b = dm^2

3) a =dm^3.

Example :

If a,b,c and d are in continued proportion, then prove that : $\frac{2a+3c}{2b+3d} = \frac{a-c}{b-d}$.

Solution

$\because$ a,b,c,d are in continued proportion

$\therefore \frac{a}{b} = \frac{b}{c} = \frac{c}{d} = m$

$\therefore$ c =dm , b = dm^2 , a =dm^3.

$\therefore \frac{2a+3c}{2b+3d} = \frac{2dm^3+3dm}{2dm^2+3d} = \frac{dm\,(2m^2+3)}{d(2m^2+3)} = m$ (1)

, $\frac{a-c}{b-d} = \frac{dm^3-dm}{dm^2-d} = \frac{dm\,(m^2-1)}{d(m^2-1)} = m$ (2)

From (1) and (2), we deduce that : $\frac{2a+3c}{2b+3d} = \frac{a-c}{b-d}$

The direct variation and inverse variation.

Direct variation	Inverse variation
If y varies directly as X and is written as $y \alpha x$, then : 1) y=mx (i.e. $\frac{y}{x}$ =m) where m is constant ≠ 0 2) $\frac{y_1}{y_2} = \frac{x_1}{x_2}$. 3) The relation between X and y is represented graphically by a straight line passing through the origin point. To prove that $y \alpha x$, we prove that: y = m X where m is a constant ≠0. For example: If y = 5 X, then $y \alpha x$	If y varies inversely as X 1 and is written as $y\alpha \frac{1}{x}$, then : 1) Y = $\frac{m}{x}$ (i.e. xy =m). where m is constant ≠ 0 2) $\frac{y_1}{y_2} = \frac{x_2}{x_1}$. 3) The relation between X and y is not a linear relation. To prove $y \alpha \frac{1}{x}$, we prove that: X y = m where m is a constant ≠ 0 For example: If y = $\frac{7}{x}$, then xy=7 and then $y \alpha \frac{1}{x}$
Example on direct variation 1) If $a \alpha b$, a=5 when b=2 , find a when b=3 2) If $a^2 + 4b^2$= 4ab , prove that : $a\alpha b$ **Solution** 1) $\because a\alpha b$ $\therefore \frac{a_1}{a_2} = \frac{b_1}{b_2}$ $\therefore \frac{5}{a_2} = \frac{2}{3}$ $\therefore a_2 = 7$ 2) $\because a^2 + 4b^2 = 4ab$ $\therefore a^2 - 4ab + 4b^2 = 0$ $\therefore (a - 2b)^2 = 0$ $\therefore$ a-2b = 0 $\therefore a = 2b$ $\therefore a \alpha b$	**Example on inverse variation** If x and y are two real variables where : $x^2y^2 + 25 = 10\,xy$, prove that : X varies inversely as y **Solution** $\because x^2y^2 - 10\,xy + 25 = 0$ $\therefore (xy - 5)^2 = 0$ $\therefore$ xy-5 =0 $\therefore$ xy = 5 $\therefore x \alpha \frac{1}{y}$

Statistics

The resources of collecting data.

1) Primary resources (field resources).
2) Secondary resources (historical resources).

The methods of collecting data

1) Method of mass population
2) Method of samples

1- Choose the correct answer from those given.

1. If: (x-1 , 13) = (8 , y-3) , then $\sqrt{x+y}$ = ……………………

a) $\sqrt{5}$ **b)** 5 **c)** 7 **d)** 25

2. If: $\frac{a}{2} = \frac{b}{3} = \frac{c}{4} = \frac{a+b+c}{3x}$, then x = ……………………

a) 3 **b)** 9 **c)** 4 **d)** 2

3. The middle proportional between 4 and 9 is ……………………

a) 6

b) -6

c) ± 6

d) 36

4. If: n(x) = 3 , n(x , y) = 12 , then n(y) = ……………………

a) 4

b) 9

c) 15

d) 36

5. The constant function f: f(x) = 3 is represented graphically by a straight line that ……………………

a) Parallels the x - axis

b) Parallels the y - axis

c) Passes through the origin point

d) Intersects the two coordinates axis

6. The third proportional for 9 : 12 , ... and 4 is ....

a) 6

b) 3

c) 2

d) 1

7. The simplest and easiest dispersion measure is ....

a) $t$he range

b) the arithmetic mean

c) the median

d) the mode

8. If : 3 a = $\frac{5}{6}$ b , then $\frac{a}{b}$ = ...

a) $\frac{18}{5}$

b) $\frac{15}{6}$

c) $\frac{6}{15}$

d) $\frac{5}{18}$

9. If (3 , 5) ∈ {3 , 6} x {x , 8} , then x = ...

a) 8

b) 6

c) 3

d) 5

10. If x ={5 , 6 , 7} , then n(x^2) = ……………………

a) 3

b) 6

c) 9

d) 12

11. If the point (x , 7) lies on the y- axis , then 5 x + 1 = ……………………

a) 0

b) 1

c) 5

d) 6

12. The set of images of the elements of the domain of the function is called ……………………

a) the rule

b) the domain

c) the range

d) the codomain

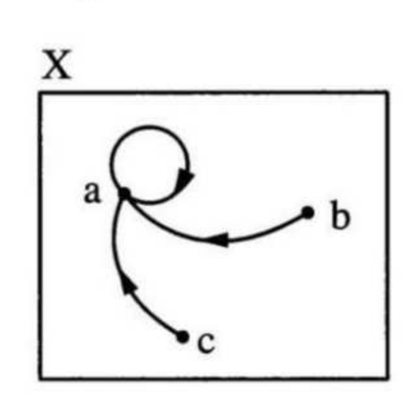
13. The opposite figure represents a function on x , then its range is ……………………

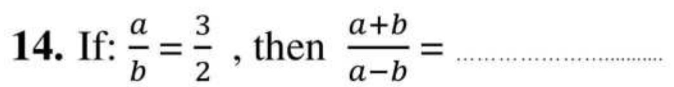
a) {a}

b) {a , b , c}

c) {a , b}

d) {b , c}





14. If: $\frac{a}{b} = \frac{3}{2}$, then $\frac{a+b}{a-b} =$ ....

a) $\frac{4}{5}$

b) $\frac{3}{2}$

c) 2

d) 5

15. If (3 , 5) ∈ {3 , 6} x {n , 8} , then n = ...

a) 8

b) 6

c) 5

d) 3

16. The positive middle proportion between 2 and 8 equals ....

a) 6

b) 4

c) −4

d) 16

17. The function f where f(x) = x (x - 4) + 1 is a polynomial of the .... degree

a) first

b) second

c) third

d) fourth

18. The fourth proportion for the numbers: 4, 12, 16 is ....

a) 20

b) 24

c) 48

d) 64

19. If the point (x-2 , 1) where x ∈ z lies on the first quadrant , then x = ...

a) 3

b) 1

c) -4

d) zero

20. if : $\frac{a+2b}{a-b} = \frac{3}{2}$, then $\frac{b}{a}$ = ...

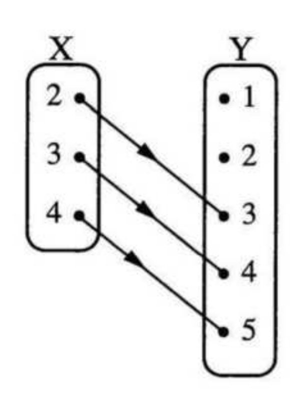
a) $\frac{1}{7}$

b) 8

c) $-\frac{1}{8}$

d) -8

21. The opposite arrow diagram represents a function from x to y, Then the range = ...



a) {2 , 3 , 4}

b) {2 , 3 , 5}

c) {3 , 4 , 5}

d) Y

22. The middle proportion between the two numbers 9 and 25 is ……………………

a) 6

b) 15

c) -15

d) $\pm$ 15

23. If the curve of the function F where f(X) = x^2 – a , passes through the point (1 , 0) , then a = ……………………

a) ± 1

b) -1

c) 1

d) Zero

24. If : : $\frac{3}{a} = \frac{7}{b} = \frac{k}{b-a}$ = , then k = ……………………

a) 3

b) 10

c) 4

d) 7

25. The fourth proportional for the quantities : 3 , 6 , 6 is ……………………

a) 3

b) 6

c) 9

d) 12

26. The ratio between the area of a square shaped region of side length L to the area of another square region of side length 2 L is ....

a) 1 : 2

b) L : 4

c) 1 : 4

d) 4 : 1

27. If : 3 x y = 8 , then ....

a) $x \propto y$

b) $y \propto x$

c) $3x \propto 8y$

d) $x \propto \frac{1}{y}$

28. The point (-3 , 4) lies in the .... quadrant

a) first

b) second

c) third

d) fourth

29. If the function f from the set X to the set Y , then the range of ⊂ ....

a) x

b) y

c) $X\ x\ y$

d) R

2- Complete each of the following.

1. From the methods of collecting data are .... , ...
2. If : (x + 5 , 8) = (1 , 6 y + x) , then y = ...
3. If : $\frac{a}{b} = \frac{c}{d}$, then $\frac{\text{..........} + 3c}{5b + \text{..........}} = \frac{a}{b}$
4. If : y ∝ x and y = 6 where x = 4 , then $\frac{y}{x}$ = ...
5. If : n (x) = 5 , n (x y) = 15 , then n (y) = ...
6. If Ahmed answered 60 % of the questions of a test with true answers and the number of questions which were answered incorrectly are 10 questions , then the number of all questions of the test is ....
7. The range of the set of values 8 , 5 , 10 , 6 , 14 is ……………………….
8. If the number 6 is the positive mean proportion of the two numbers 2 and a , then a = …………………………….
9. The point (5 , -3) lies in the …………………………. quadrant
10. If : x = {2 , 3} , then x^2 = …………………………….
11. If: $\frac{x}{5} = \frac{y}{4} = \frac{x+y}{k}$, then k = ………………………

If: x = {(2 , 6) , (2 , 9) , (3 , 6) , (3 , 9) , (5 , 6) , (5 , 9)}

Find:

1. x ……………………………………………………………………………

2. y ……………………………………………………………………………

3. y^2 ……………………………………………………………………………

3- If: a , b , c and d are proportional quantities, prove that.

$$\frac{a}{b-a} = \frac{c}{d-c}$$

……………………………………………………………………………

……………………………………………………………………………

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4- If: x = {1 , 2 , 3} , y = { 2 , 3 , 4 , 5 , 6} and R is a relation from x to y where "aRb" means " a = $\frac{1}{2}$ b " for each a ∈ x and b ∈ y .

Write R and represent it by an arrow diagram, is the relation is a function? Why?

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5- Draw the curve of the function f: f(X) = x^2 – 4 x + 3 on the interval [0 , 4] and from the graph , find:

a. The coordinates of the vertex point of the curve

b. The maximum or minimum value

c. The equation of the axis of symmetry

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6- If a , b , c , and d are in a continued proportional , prove that.

$$\sqrt[3]{\frac{5a^3-3c^3}{5b^3-3d^3}} = \frac{a+c}{b+d}$$

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7- If: $\frac{x}{2} = \frac{y}{3} = \frac{z}{4}$, prove that: $\frac{2x-y+5z}{3y-x} = 3$

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8- The opposite arrow diagram represents a relation on x, write R and represent it by a Cartesian diagram, is the relation a function? Why?

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9- The ratio between two numbers is 3 : 4 and the difference between them is 25 , find their product

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10- If : x = { k , 8 , 6 , 10} and y = { 3 , 5 , 4 , 7} and R is a relation from x to y where "a R b" means " $b = \frac{a}{2}$ " for each a ∈ x and b ∈ y **Find** the value of k which makes R a function from x to y Represent the function by a Cartesian diagram.

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11- If b is the middle proportion between a and c , prove that : $\frac{a^2+b^2}{b^2+c^2} = \frac{a}{c}$

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12- If a , b , c and d are proportional quantities , then prove that:

$$\frac{5a+3c}{5b+3d} = \frac{3a-3c}{3b-2d}$$

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13- If: 3 a = 2 b = 5 c , then find a : b : c

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14- Graph the function f where $f(X) = x^2 - 2x - 1$ taking $x \in [-2, 4]$ and from the graph , find.

a. Maximum or minimum value of the function f

b. Equation of the axis of symmetry of the curve of the function

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15- If x = {3 , 4} , y = {4 , 5} , z = {6 , 5} Find.

a) $X \times (y \cap z)$

b) $(x - y) \times z$

c) $(x - y) \times (y - z)$

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16- Represent the function f: R ⟶ R where f(x) = 2 – x and find the points of intersection of the straight line which represents it with the coordinate axes

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17- If : $\frac{x}{a-b+c} = \frac{y}{b-c+a} = \frac{z}{c-a+b}$, Prove that: $\frac{x+y}{a} = \frac{y+z}{b}$

18- If : f(x) = a x + 4 and f (1) = 7 find a, then find the value of f(4) + f (2) – f (5)

19- If : x = {0 , 1 , 4 , 7} , y = {1 , 3 , 5 , 6} and R is a relation from x to y where "a R b" means " a + b < 8 " for each a ∈ x and b ∈ y Write R and represents it by an arrow diagram , is R a function ? why?

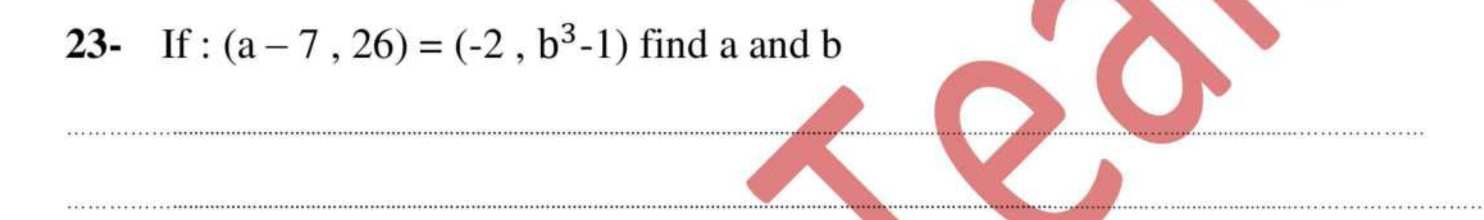
20- If b is the middle proportion between a and c, Then prove that.

$$\frac{3c^2-5b^2}{3b^2-5a^2}=\frac{c^2}{b^2}$$

21- Represent graphically the function f where f(X) = x^2-4 x where x ∈ R taking x ∈ [-1 , 5] and from the graph , deduce the equation of the axis of symmetry

22- If: $\frac{a}{b} = \frac{1}{3}$ and $\frac{c}{d} = \frac{7}{2}$, find the ratio. $\frac{2\,a\,c+b\,d}{b\,c-3\,a\,d}$

23- If : (a – 7 , 26) = (-2 , b^3-1) find a and b



24- If : f(x) = $6x^2$ + a , h (X) = a where f and h are polynomial functions and f(2) + h (2) = 20 , then find: f(-1) – h (100)



25- If: $x = z + 8$, z varies inversely as y and $z = 2$, where $y = 3$, Find : y when $x = 3$

26- If : $\frac{a}{4} = \frac{b}{5} = \frac{c}{3}$, then prove that. $\frac{a-b+c}{a+b-c} = \frac{1}{3}$

27- If : $x = \{ 2 , 3 , 4 , 7\}$ and $y = \{ 1 , 2 , 3 , 4 , 7 , 8\}$ and R is a relation from x to the set y such that "a R b" means " a + b is not a prime number " for all $a \in x$ and $b \in y$ Write R and represent it by an arrow diagram

28- If : x = { 2 , 3 , 4 } and y = { 3 , 4 , 5 , 6 , 7 , 8} and f: x y where f(x) = 9 – x, Find the images of the elements of x by the function f

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29- If y varies as x and y = $\frac{5}{3}$, when x = $\frac{1}{6}$ find the value of x when y = $\frac{3}{4}$

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30- Find the number which should be subtracted from each of the numbers 3 , 7 , 19 to be in continued proportion

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31- If: $\frac{x+y}{5} = \frac{y+z}{3} = \frac{z+x}{6}$ prove that: $\frac{x-z}{2} = \frac{x+y+z}{7}$

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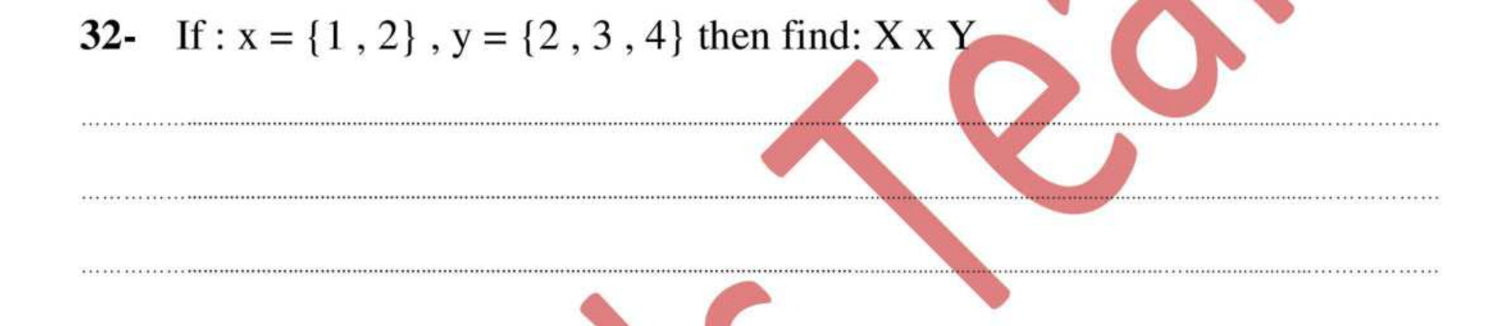
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32- If : x = {1 , 2} , y = {2 , 3 , 4} then find: X x Y

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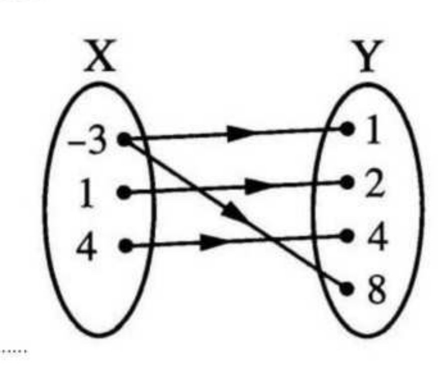
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33- The opposite arrow diagram represents the ration R

From the set x to the set y , where:

x = {-3 , 1 , 4} , y = {1 , 2 , 4 , 8} ,

Write R is R a function? why?



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34- The following table represents the number of children of 100 families in a city:

Number of children	0	1	2	3	4	Total
Number of families	6	15	40	25	14	100

Calculate each of the arithmetic mean and the standard deviation

1- Choose the correct answer in each of the following.

1- $2 \sin 30^0 \cos 30^0 =$ ……….

- **a)** $\sin 60^0$
- **b)** $\cos 60^0$
- **c)** $\tan 60^0$
- **d)** $2 \sin 60^0$

2- The points (-3, 0), (0, 3), (3 ,0) are the vertices of …………

- **a)** a scalene triangle
- **b)** an equilateral triangle
- **c)** an obtuse-angled triangle
- **d)** a right-angled triangle and isosceles

3- The equation of the straight line which passes through the point (2, -3), parallel to X-axis is …………

- **a)** X = -2
- **b)** Y = -3
- **c)** X = 2
- **d)** Y = 3

4- If the straight line whose equation: X + 3Y – 6 = 0 is perpendicular to the straight line whose equation: a X – 3y + 7 = 0, then a = ……

- **a)** 2
- **b)** 9
- **c)** -9
- **d)** -2

5- If the point (0, 4) is the midpoint of the distance between the two points (-1, -1), (X, Y), then the point (X, Y) is …………

a) (1 ,9)

b) (-1, 9)

c) $(-\frac{1}{2}, \frac{3}{2})$

d) (-1 ,3)

6- In Δ ABC, if m (< B) = 90^0, AB = 3 cm, BC = 4 cm, then sin A cos C = …………

a) 1

b) $\frac{9}{25}$

c) $\frac{12}{25}$

d) $\frac{16}{25}$

7- The distance between the two points (-4 ,0) and (0, -3) is ……. Length unit

a) -1

b) -7

c) 5

d) 12

8- Cos (X + 50^0) = $\frac{1}{2}$, where X is the measure of an acute angle, then X = ………0

a) 5

b) 10

c) 25

d) 30

9- If: A = (1, 3), B = (3, -5), then the coordinates of the midpoints of $\overline{AB}$ is …………..

a) (2 ,0)

b) (2, 4)

c) (2, -1)

d) (-2 ,1)

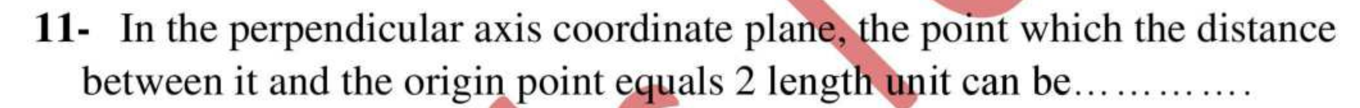
10- $4 \cos 30^0 \tan 60^0 =$ ……….

a) $2\sqrt{3}$

b) 3

c) 6

d) 12



11- In the perpendicular axis coordinate plane, the point which the distance between it and the origin point equals 2 length unit can be………….

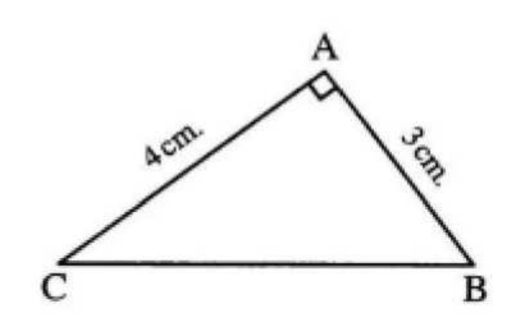
a) $(1 , \sqrt{3})$

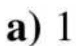
b) (2, 1)

c) (0 ,2)

d) (-3 ,5)

12- In the opposite figure: Sin B + cos C = …….





a) 1

b) $\frac{8}{5}$

c) $\frac{6}{5}$



d) Zero

13- $\sin 60^0 + \cos 30^0 + \tan 60^0 =$ ………

a) $2\sqrt{3}$

b) $3\sqrt{3}$

c) $\frac{\sqrt{3}}{2}$

d) $\frac{2}{\sqrt{3}}$

14- If: $\tan (X + 5^0) = 1$, where X is the measure of an acute angle , then X = ……… ^{0}

a) 45^0

b) 25^0

c) 40^0

d) 30^0

15- The midpoints of $\overline{AB}$ where A (6 ,1) and B (-2, 3) is the point ………

a) (4 ,2)

b) (2, 2)

c) (4, 4)

d) (8 ,4)



16- The distance between the point $(5, \tan^2 60^0)$ and the X-axis = ……….. length unit

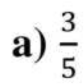
a) 5

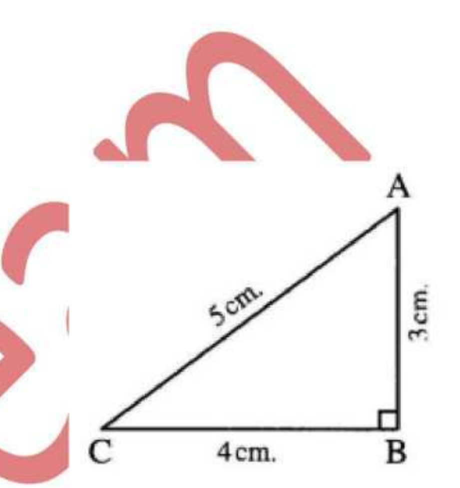
b) $\sqrt{3}$

c) $\sqrt{5}$

d) 3

17- In the opposite figure: tan C = ……….





a) $\frac{3}{5}$

b) $\frac{4}{3}$

c) $\frac{4}{5}$

d) $\frac{3}{4}$

18- The distance between the two points $(0, \tan^2 60^0)$ and $(8 \sin 30^0, 0)$ equals …………... length unit

a) 1

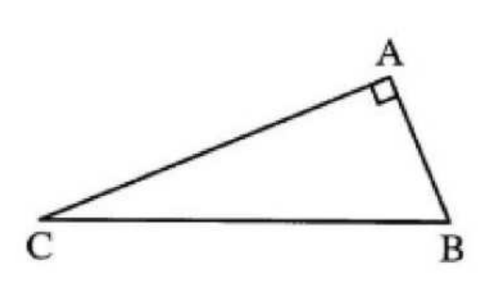
b) 3

c) 4

d) 5

19- In the opposite figure: Sin C =…………





a) sin B

b) cos B

c) tan C

d) cos C

20- If: $2 \sin X = \tan 60^0$, where X is the measure of an acute angle, then X = ………0

e) 15^0

f) 30^0

g) 60^0

h) 45^0

21- If: $\tan 2X = \frac{\sqrt{3}}{3}$, where X is the measure of an acute angle, then X = ……^{0}

a) 15^0

b) 30^0

c) 60^0

d) 45^0

22- If: C (2, 1) is the midpoint of $\overline{AB}$ where B (3 ,0), then A is …….

a) (1 ,2)

b) (2, 1)

c) (5 ,1)

d) (1 ,5)

23- If: $\cos 2X = \frac{1}{2}$, where X is the measure of an acute angle, then m (< X) = ………^{0}

a) 15

b) 30

c) 45

d) 60

24- The slope of the straight line whose equation: $2X - 3Y + 5 = 0$ equals ………….

a) $-\frac{3}{2}$

b) $-\frac{2}{3}$

c) $\frac{2}{3}$

d) $\frac{3}{2}$

25- In the Δ ABC, if m (< B) = 90^0, then sin A + cos C = ………..

a) 2 sin A

b) 2 sin C

c) 2 sin B

d) 2 cos A

26- A circle of center at the origin point and its radius length is 2 length units, which of the following points belongs to the circle

a) (1,-2)

b) $(-2,\sqrt{5})$

c) $(\sqrt{3}, 1)$

d) (0, 1)

27- The perpendicular distance between the two straight lines: $x - 2 = 0$, $x + 3 = 0$ equals ……………..units.

a) 1

b) 5

c) 2

d) 3

28- The equation of the straight line pass through the point (2,3) and is parallel to x-axis is …………..

a) $x = 2$

b) $x = 3$

c) $y = 2$

d) $y = 3$

29- The equation of the straight-line pass through the point (-5, 3) and is parallel to y-axis is …………..

a) $x = -5$

b) $x = 3$

c) $y = 2$

d) $y = -5$

30- The distance between the point (-4,3)and y-axis equals …….length units

a) -3

b) -4

c) 3

d) 4

31- The number of sides of the regular polygon in which the measure of one of its interior angles is 144° equals ……sides.

a) 7

b) 8

c) 9

d) 10

32- The measure of the interior angle of a regular hexagon =………

a) 720°

b) 360°

c) 180°

d) 120°

33- An isosceles triangle, the length of its sides may be 4cm, 9cm… cm

a) 4

b) 9

c) 13

d) 36

34- If 3, 7, l are the lengths of the sides of a triangle, then l can be equal to …………..

a) 3

b) 4

c) 7

d) 10

35- The image of the point (-3, 5) by reflection on y-axis is ………….

a) (3, 5)

b) (5, 3)

c) (-5, 3)

d) (-3, - 5)

36- The image of the point (4, 5) by translation (2, 3) is ……….

a) (6,-8)

b) (-8, 6)

c) (6, 8)

d) (-6,-8)

37- ABC is a triangle, $m(\angle A) = 85°$, $\sin B = \cos B$, then $m(\angle C) =$ ………

a) 30°

b) 45°

c) 50°

d) 60°

38- The area of the triangle bounded by the straight line $x = 0$, $y = 0$, $3x + 2y = 12$ equals ………….square units.

a) 6

b) 12

c) 4

d) 5

39- The slope of straight line $x - 5 = 0$ is ……….

a) 5

b) $\frac{1}{5}$

c) Undefined

d) zero

40- The point of concurrence of the medians of the triangle divides each median in the ratio of ……….from the base.

a) 2:3

b) 2:1

c) 1:2

d) 3:2

41- If $C \in$ the axis of symmetry of $\overline{AB}$, then CA………CB

a) ⊥

b) <

c) >

d) =

42- If $L_1 \perp L_2$ and $L_3 \perp L_2$ then $l_1 \dots \dots l_3$

a) ⊥

b) //

c) =

d) <

2- ABCD is a quadrilateral in which A (3 ,3), B (1, -1), C (-3, -3) and D (-1 ,1), **prove that:** ABCD is a rhombus and find its area.

3- If the distance between the point (a, 7) and the point (0, 3) equal 5 length unit find the value of a.

4- prove that: The points A (2 ,3), B (3, 4) and C (5, 6) are collinear

5- Prove that: the triangle whose vertices A (1, -2), B (-4 ,2) and C (1 ,6) is isosceles.





6- Prove that: The points A (4 ,0), B (4 ,5) and C (-2 ,5) are the vertices of a right-angled triangle and find its area.

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7- ABCD is a quadrilateral where A (-1 ,1), B (0, 5), C (5 ,6) and D (4 ,2) prove that: ABCD is a parallelogram

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8- $\overline{AB}$ is a diameter in the circle M where A (-6, -8) and B (6 ,8), determine the coordinates of the Centre of this circle (M) and its circumference?

$(\pi = 3.14)$

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9- ABCD is a parallelogram, its diagonals intersect at E, if A (3, -1), B (6 ,2) , C (1 ,5), then **find:**

First: the coordinates of E, D **second**: the length of $\overline{DE}$

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10- Prove that : the points A(3,-1),B(-4,6) and C(2,-2) which belongs to a perpendicular coordinates plane passing through the circle whose Centre is the point M(-1,2) ,then find the area and circumference.

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11- ABC is a right-angled triangle at B , $\overline{BD}$ is a median in it , find the coordinates of D and the length of $\overline{BD}$ knowing that A (10 , 14) , C (4 ,6)

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12- Find the equation of the straight line passes through the point (2, -1) and parallel to the straight line : $2X - Y + 5 = 0$

13- Find the slope and intercepted part of Y-axis of the straight line whose equation :$\frac{x}{2} + \frac{y}{3} = 1$

14- Find the equation of the straight line which passes through the point (1, 6) and the midpoint of $\overline{AB}$, where A (1 , -2) , B (3 ,-4)

15- If: A (-1,-1), B (2, 3) and C (6, 0):

Prove that: Δ ABC is a right-angled at B

Find: the area of Δ ABC

Find: sin A and tan C

16- Find the equation of the straight line passes through the point (2 -1) and parallel to the straight line: $2X - Y + 5 = 0$

17- Find the equation of the straight line which passes through the point (3, 4) and perpendicular to the straight line: $5X - 2Y + 7 = 0$

18- ABC is a right-angled triangle at B , AB = 15 cm , BC = 20 cm , prove that: cos C cos A – sin C sin A = zero

19- If $\sin x = \sin 30° \cos 30° + \cos 60° \sin 60°$, without using the calculator, find x where X is the measure of an acute angle.

20- If the ratio between the measures of the interior angles of the triangle is 2: 5: 6 find the measure of each angle in degrees.

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21- ABC is a right-angled triangle at B, $m(\angle C) = 40°$ and $AC = 12$ cm, then find the length of $\overline{AB}$ to the nearest cm.

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22- ABC is a triangle, $AB = AC$, $BC = 16$ cm and $\cos B = \frac{4}{5}$, then find the surface area of the triangle ABC.

23- ABC is a right-angled triangle at B, $2\,AB = \sqrt{3}\,AC$, find the trigonometrical ratios of $\angle C$.

24- ABCD is a trapezium in which $\overline{AD} // \overline{BC}$, m (< B) = 90^0, if AB = 3 cm, AD = 6 cm, BC = 10 cm, prove that: $\cos(\angle DCB) - \tan(\angle ACB) = \frac{1}{2}$

25- If the straight line whose equation is $ax + 2y - 7 = 0$ is parallel to the straight line which makes an angle of measure 45° with the positive direction of x-axis, find the value of a.

26- ABCD is an isosceles trapezium, its area= $36cm^2$,$\overline{AD}//\overline{BC}$, AD=6cm.and BC=12cm.

Find the value of: $\sin B + \cos C$

27- Find the equation of the straight line whose slope is equal to the slope of straight line $\frac{y-1}{x} = \frac{1}{3}$ and intercepts a negative part from the y-axis that is equal to 3 units.

28- ABCD is a trapezoid, $\overline{AB} // \overline{CD}$,A(9,-2),B(3,2),C(x,-x),D(4,-3), Find the coordinates of the point C.

29- Find the equation of the axis of symmetry of $\overline{AB}$ where A (-3,5) and B(1,3).

30- If C is the midpoint of $\overline{AB}$ where A (x, -6) , B(9,-12) and C(-3,y), Find the value of x, y.

31- If $\overleftrightarrow{AB}$// the y − axis where A(x, 7), B (3, 5), find the value of x.

With my best wishes



كيفية طباعة صفحات معينة من ملف معين



مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

File Edit View E-Sign Window Help

Open... Ctrl+O
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Create
Insert Pages
Save Ctrl+S
Save As... Shift+Ctrl+S
Save as Other
Reduce File Size
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Protect Using Password
Request Signatures
Share File
Revert
Close File Ctrl+W
Properties... Ctrl+D
Print... Ctrl+P
1 0003.pdf
2 E:\Image\pdf\0001.pdf
3 0001.pdf
4 Adobe Scan 2 Sep 2021.pdf
5 E:\Image\New folder\2.pdf
View All Recent Files...
Exit Application Ctrl+Q

خطوة 1

خطوة 2
اختيار اسم الطابعة بتاعتك

خطوة 3
كتابة الصفحات المراد طباعتها
نكتب رقم 4 ثم نكتب الشرطة دي – ثم نكتب 9

خطوة 4
اختيار نوع الورق

Print
Printer: HP LaserJet M207-M212 | Properties | Advanced | Help
Copies: 1 | Print in grayscale (black and white) | Save ink/toner
Pages to Print: All | Current | Pages 4 - 9 | More Options
Page Sizing & Handling: Size | Poster | Multiple | Booklet
Fit | Actual size | Shrink oversized pages | Custom Scale: 100 %
Choose paper source by PDF page size
Orientation: Auto | Portrait | Landscape
Comments & Forms: Document and Markups | Summarize Comments
Document: 21.0 x 29.7cm
21.59 x 27.94 cm
Page 1 of 18
Page Setup... | Print | Cancel

خطوة 5
اختيار A4

Page Setup
Paper
Size: A4
Source: Automatically Select
Orientation: Portrait | Landscape
Margins (millimeters): Left 25 | Right 25 | Top 25 | Bottom 25
OK | Cancel

خطوة 6

Print